CHECK LIST FOR ALDERMANIC SUBMISSIONS

x	Cover Letter
x	Resolutions/ Orders/ Ordinances
x	Prior Notification Form
x	Fiscal Impact Statement - Should include comprehensive budget
x	Supporting Documentation (if applicable)
x	Disk or E-mailed Cover letter & Order

IN ADDITION IF A GRANT:

	Notice of Intent
	Grant Summary
	Executive Summary (not longer than 5 pages without an explanation)

Date Submitted: November 22, 2022

Meeting Submitted For: December 5, 2022

Regular or Suspension Agenda: Regular

Submitted By: Michael Piscitelli

Title of Legislation:

ZONING ORDINANCE TEXT AMENDMENT AND ZONING ORDINANCE MAP AMENDMENT APPROVING EXPANSION OF SCIENCE PARK PLANNED DEVELOPMENT DISTRICT #49 TO INCLUDE PARCELS OF LAND KNOWN AS 88 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02600), 110 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02700) and 116 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02500) (collectively "NEW PARCEL M"), AMENDMENT OF THE GENERAL PLANS FOR PORTIONS OF EXISTING PARCEL L and PARCEL B, DIMENSIONAL, PARKING, LOADING and OTHER DEVIATIONS FROM THE REQUIREMENTS OF PDD #49, THE IH ZONE AND THE BA ZONE FOR NEW PARCEL M AND FOR EXISTING PARCELS B, C and L, AND USES FOR NEW PARCEL M AND ADDITIONAL USES FOR EXISTING PARCELS B AND C

Comments: _____

Coordinator's Signature: _____

Controller's Signature (if grant): _____

Mayor's Office Signature: _____

Call 946-7670 with any questions.
jrodriguez@newhavenct.gov

PRIOR NOTIFICATION FORM

NOTICE OF MATTER TO BE SUBMITTED TO THE BOARD OF ALDERS

TO (list applicable alder): Jeanette L. Morrison, Alder 22nd Ward
Devin Avshalom-Smith, Alder 20th Ward
Steven Winter Alder 21st Ward
Kimberly R. Edwards, Alder 19th Ward

DATE: November 22, 2022

FROM: Department Economic Development
Person Michael Piscitelli Telephone (203) 946-2867

This is to inform you that the following matter affecting your ward(s) will be submitted to the Board of Alders.

ZONING ORDINANCE TEXT AMENDMENT AND ZONING ORDINANCE MAP AMENDMENT APPROVING EXPANSION OF SCIENCE PARK PLANNED DEVELOPMENT DISTRICT #49 TO INCLUDE PARCELS OF LAND KNOWN AS 88 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02600), 110 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02700) and 116 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02500) (collectively "NEW PARCEL M"), AMENDMENT OF THE GENERAL PLANS FOR PORTIONS OF EXISTING PARCEL L and PARCEL B, DIMENSIONAL, PARKING, LOADING and OTHER DEVIATIONS FROM THE REQUIREMENTS OF PDD #49, THE IH ZONE AND THE BA ZONE FOR NEW PARCEL M AND FOR EXISTING PARCELS B, C and L, AND USES FOR NEW PARCEL M AND ADDITIONAL USES FOR EXISTING PARCELS B AND C

Check one if this an appointment to a commission

- ☐ Democrat
- ☐ Republican
- ☐ Unaffiliated/Independent/Other _____

INSTRUCTIONS TO DEPARTMENTS

1. Departments are responsible for sending this form to the alderperson(s) affected by the item.
2. This form must be sent (or delivered) directly to the alderperson(s) **before** it is submitted to the Legislative Services Office for the Board of Aldermen agenda.
3. The date entry must be completed with the date this form was sent the alderperson(s).
4. Copies to: alderperson(s); sponsoring department; attached to submission to Board of Aldermen.

FISCAL IMPACT STATEMENT

DATE:	**November 22, 2022**		
FROM (Dept.):	**Economic Development Administration**		
CONTACT:	**Michael Piscitelli**	**PHONE**	**203-946-2366**

SUBMISSION ITEM (Title of Legislation):

ZONING ORDINANCE TEXT AMENDMENT AND ZONING ORDINANCE MAP AMENDMENT APPROVING EXPANSION OF SCIENCE PARK PLANNED DEVELOPMENT DISTRICT #49 TO INCLUDE PARCELS OF LAND KNOWN AS 88 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02600), 110 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02700) and 116 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02500) (collectively "NEW PARCEL M"), AMENDMENT OF THE GENERAL PLANS FOR PORTIONS OF EXISTING PARCEL L and PARCEL B, DIMENSIONAL, PARKING, LOADING and OTHER DEVIATIONS FROM THE REQUIREMENTS OF PDD #49, THE IH ZONE AND THE BA ZONE FOR NEW PARCEL M AND FOR EXISTING PARCELS B, C and L, AND USES FOR NEW PARCEL M AND ADDITIONAL USES FOR EXISTING PARCELS B AND C.

List Cost: **Describe in as much detail as possible both personnel and non-personnel costs; general, capital or special funds; and source of funds currently budgeted for this purpose. NONE**

	GENERAL	SPECIAL	BOND	CAPITAL/LINE ITEM/DEPT/ACT/OBJ CODE
A. Personnel				
1. Initial start up	**…**	**…**		
2. One-time	**…**	**…**		
3. Annual	**…**	**…**		
B. Non-personnel	**…**	**…**		
1. Initial start up	**…**	**…**		
2. One-time	**…**	**…**		
3. Annual	**N/A**	**N/A**		

List Revenues: **Will this item result in any revenues for the City? If Yes, please list amount and type.**

NO	
YES	**x**
1. One-time	**$... (see below)**
2. Annual	**TBD (see below)**

Other Comments: Yes. This item will generate significant tax revenues for the City. This Planned Development District Amendment to the Science Park PDD #49 will enable the development of three separate substantial projects including office/laboratories and mixed-use residential and retail buildings. The developments will be constructed on properties that are currently either parking lots or dilapidated and contaminated buildings that are paying only minimal taxes. The projects will also generate substantial demolition and building permit fees.

November 22, 2022

Honorable Michael Smart
City/Town Clerk
City of New Haven
200 Orange Street
New Haven, CT06510

Honorable Tyisha Walker-Myers
President of the New Haven Board of Alders
165 Church Street
New Haven, CT 06510

Re: Petition to Amend Science Park Planned Development District, PDD #49

Dear Mr. Smart and Ms. Walker-Myers:

Science Park Development Corporation, its affiliates and Winchester Holdco LLC, a joint venture of Twining Properties, LLC and LMXD, LLC (collectively the, "Applicants") are pleased to present this Petition to amend the Science Park Development District PDD #49 to enable the completion of the redevelopment of Science Park. The amendments proposed in this Petition will allow the transformation of derelict and dangerous former Winchester Factory buildings as well as surface parking lots into new economy developments, including lab/biotech/office buildings and mixed-use residential structures with restaurants and retail. These improvements will create jobs, provide additional needed housing, including affordable housing, better connect Science Park with the Newhallville and Dixwell neighborhoods, result in the clean-up of Brownfields, and generate taxes.

In particular, the Petition seeks to add the "Tract J Parking Lot", an approximate two acre 199 space parking lot located at 88, 110 and 116 Munson Street to PDD #49. If added to the Science Park PDD, this parcel will be known as New Parcel M. The Tract J Parking Lot is located across Munson Street from the Science Park PDD and provides parking for the employees at the Winchester Works building (formerly known as the Higher One building). The Tract J Parking Lot is currently located in the BA (General Business) zone that does not allow lab/biotech use. The Applicants plan to either build on the successes of the lab/biotech offices across the street at Winchester Works (115 Munson Street), in Science Park's Buildings 4 and 5 and in the City; by developing a lab/office building on New Parcel M or construct . a mixed-use residential building on Parcel M, depending on the market demand.

The Petition also seeks to construct a a mixed-use residential building or a lab/biotech building over a parking structure in the Eastern Courtyar again depending upon the market The approved General Plans for the Eastern Courtyard contemplated the rehabilitation of the former Winchester Factory buildings on this site, However, when environmental studies were done of the six concrete buildings that were to be renovated, it was discovered that oil from the Winchester manufacturing processes had seeped into the floors, walls and columns of the buildings and was

emitting odors. The Connecticut Department of Health determined that the oil, which included a highly toxic compound, would pose an unacceptable risk to any future occupants of the buildings. The remaining three buildings in the Eastern Courtyard which do not contain this toxic oil are structurally unsound. Accordingly, this Petition contemplates the demolition of the Eastern Courtyard buildings. In their place, the Applicants intend to construct a mixed-use building over a parking structure. The residential component of the building, as will any residential building in PDD #49, set aside 20% of the apartments for families whose income is at 50% AMI, provided that Low Income Tax Credits are available for these units.

The Petition also contemplates the construction of what is likely to be a mixed-use office/lab or residential and/or retail building at the corner of Division Street and Winchester Avenue on Parcel B of PDD #49. Currently there is a parking lot at this location. Additionally, the Petition seeks to amend the Use Table for PDD #49 to set forth the permissible uses for New Parcel M and to permit residential and retail uses on Parcels B and C. Finally, the Petition requests amendments to the Table of Deviations to reduce the number of parking and loading spaces and remove bulk and dimensional limitations that would otherwise inhibit the development of robust, dense and appropriate developments.

We have reviewed our plans with the Alders representing the Science Park area, the Newhallville and Dixwell Management Teams as well as with members of neighborhood on several occasions over the last couple of years and recently.

Enclosed please find our Petition, including our General Plans and a traffic study, and a check for $3700.

Sincerely,

Science Park Development Corporation

By: _____

David Silverstone
Chief Executive Officer and Chairman of the Board of Directors

Winchester Holdco LLC

By: Twining Properties LLC

By: _____

Alexander Twining
CEO & President

By: LMXD INVESTOR I LLC

By: _____
Sam Chapin
Its: Authorized Signatory

Final

PETITION/APPLICATION
TO
AMEND SCIENCE PARK PLANNED DEVELOPMENT DISTRICT #49
TO ADD
NEW PARCEL M, TO AMEND THE GENERAL PLANS FOR PARCELS L AND B AND
FOR ADDITIONAL PERMITTED USES AND DIMENSIONAL, BULK AND PARKING VARIANCES

November 22, 2022

TABLE OF CONTENTS

I. INTRODUCTION

Science Park Development Corporation, its affiliated entities (collectively "SPDC")[1] and Winchester Holdco LLC (the "Developer"), a joint venture between Twining Properties, LLC ("Twining") and a LMXD, LLC ("LMXD"), (collectively SPDC, Twining and LMXD will be referred to as "Applicants") hereby apply pursuant to Section 65 of the Zoning Ordinance of the City of New Haven (the "Zoning Ordinance") for an amendment to the Science Park Planned Development District, PDD #49 ("PDD #49" or the "Science Park PDD"). The amendment seeks to (i) increase the boundaries of PDD #49 to include 1.7899 acres of land currently used as a parking lot at the southern end of Science Park and across Munson Street known as 88 Munson Street, 110 Munson Street, and 116 Munson ("New Parcel M" or "Parcel M")[2] and (ii) amend the General Plans for Parcel L to provide for the demolition of certain buildings on the eastern side of the property known as 275 Winchester Avenue (the "Eastern Courtyard") and the construction of a building on that property. The amended General Plans for the Eastern Courtyard on Parcel L also include a possible public plaza to be known as Sheffield Place, which, if constructed, would be located off of Sheffield Avenue Extension a private street to be constructed in PDD #49, as described below.

The amendment also seeks to (i) amend the General Plans for Parcel B to permit the construction of a new building in an area that is currently used for parking (ii) expand the types of uses allowable in PDD #49 on certain parcels, including Parcels B, C and

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[1] The Science Park Development Corporation affiliated entities making this application are: SPDC Tract E, LLC; SPDC Tract D, LLC; SPDC Tract A, LLC; SPDC Tract J, LLC; and SPDC 110 Munson LLC.

[2] Historically, parcels in Science Park have been designated as "Tracts". Parcel M is most of the tract known as "Tract J".

New Parcel M, and (iii) modify the bulk, dimensional, parking and loading requirements for Parcels B, C, L, and New Parcel M. These changes are required in order to demolish decades long-vacant, deteriorated and contaminated factory buildings on Parcel L which cannot be used for any purpose according to the Connecticut Department of Health, transform parking lots on Parcel B and New Parcel M into dynamic developments, attract new economy businesses to Science Park, including biosciences, and expand retail and residential uses in Science Park, thereby completing the redevelopment of the Science Park. These changes will also allow the affected Parcels to be remediated and cleared of unusable buildings and will assist in the retention of businesses, the attraction of new businesses and residents and the growth of services available in the Dixwell/Newhallville neighborhoods. The proposed amendments will create numerous construction and permanent jobs in Science Park and provide significant additional tax revenue to the City of New Haven.

II. HISTORY OF PDD #49

PDD #49 was approved by the New Haven Board of Aldermen on April 4, 1983 pursuant to § 65 of the Zoning Ordinance. The Science Park PDD originally encompassed 35 acres located for the most part at the southwest and southeast corners of the intersection of Division Street and Winchester Avenue. The original PDD #49 had five parcels – Parcels A, B, C, D, and E. The initial purpose of the Science Park PDD was to transition the area that had once housed The Winchester Repeating Arms Company ("Winchester") and its successors, the Olin Corporation ("Olin") and United States Repeating Arms ("USRAC") from a heavy manufacturing district to a zone where more current uses, such as research and development, high technology, light manufacturing,

and supportive office and commercial uses would be allowed. Because the area to be covered by the original PDD was zoned IH (Heavy Industrial), in 1983, a zone change was required to permit the new uses described above. The original PDD #49, as does the current Science Park PDD, included a table of uses, which assigned permissible uses to each parcel.

In 1985, PDD #49 was amended to add 10 additional acres located to the south of the original PDD area, which are known as Parcels G, J and K. (Parcels J and K had been zoned IL (Light Industrial)). Additionally, the Use Table was amended to allow overnight lodging in connection with a conference center on Parcel A.

On May 15, 1989, the Board of Aldermen approved a third amendment to PDD #49 to permit a restaurant, lounge and banquet facilities in connection with a proposed conference center for Parcel A, which was never built. In 2006, PDD #49 was amended for the fourth time by the Board of Aldermen to allow a secondary school (Amistad Academy) on Parcel C.

On September 7, 2010, PDD #49 was amended for the fifth time by the Board of Aldermen to expand PDD #49 to include Parcel L, which is comprised of 11.6 acres and consists of properties known as 275 Winchester Avenue, 315 Winchester Avenue and 270 Mansfield Street (the “2010 Amendment”). The 2010 Amendment also expanded the uses permitted in PDD #49 to include additional residential, retail, medical, commercial, and high technology uses.

In 2014, PDD #49 was amended for a sixth time to allow primary and secondary schools on Parcel B for the Highville Charter School, which is located at 300 and 320 Mansfield Street. Finally, on October 27, 2021, PDD #49 was amended for a seventh time

to expand the boundaries of Parcel K to include all of 291 Ashmun Street, 309 Ashmun Street and 178-186 Canal Street and to allow a residential use of up to 176 apartments on Parcel K.

Most recently, on May 18, 2022, the New Haven City Plan Commission granted three minor modifications for PDD #49. First, the City Plan Commission permitted the Developer's affiliate to reopen the historic Sheffield Avenue to be known as Sheffield Avenue Extension, which will run north to south from Division Street to Munson Street, and to reopen Mason Street, which will run east to west from Mansfield Street to Winchester Avenue, as private streets. (See Appendix 6, Revised Drawing #6). Sheffield Avenue Extension and Mason Street will be privately constructed and maintained but will be publicly accessible. Sheffield Avenue Extension is located on Parcels B and L, and Mason Street is located on Parcel L. The City has received a $5 million Urban Act Grant to construct this infrastructure and will pass these funds onto SPDC for the construction of these roads as well as for the construction of Mason Place, which is a new park in Science Park and is described below. The Developer or its affiliate will construct the roads and the park.

Second, the City Plan Commission eliminated the condition in Appendix 6, Original Drawing #6 which required the approval of the State Historic Preservation Officer ("SHPO") and the National Parks Service ("NPS") before the buildings depicted in Appendix 6, Original Drawing #6 on 270 Mansfield Street could be demolished. The City Plan Commission eliminated this condition because the Developer is no longer applying for Historic Tax Credits due to the dangerous conditions of some of the factory buildings, as described below. Consequently, NPS will not be involved in the project and SHPO, at

present, is similarly not required to consent to the demolition of the structures on 270 Mansfield Street. In the event that state funds are provided for the development of 270 Mansfield Street and/or for the Eastern Courtyard, SHPO may be involved, depending on the nature and purpose of the funding. See footnote #5.

Third, the City Plan Commission eliminated the traffic improvements previously required to be made at 65% build out of Parcel L. These improvements included the construction of a mini-roundabout at the Hillside/Munson/Mansfield Streets intersection, the reduction of lane widths on Division Street between Prospect Street and Winchester Avenue, the installation of raised medians and curb extensions at the intersection of Division Street and Mansfield Street, the installation of a left turn lane in the westbound direction from Division Street, and the removal of a fence on the southwest corner of the intersection. The City Plan Commission found that most of these improvements are no longer appropriate because of the introduction of Sheffield Avenue Extension and Mason Street, which will improve circulation and reduce traffic on the City Streets. In lieu of the requirement for a mini-roundabout, the City Plan Commission determined that the modification of the design for the intersection of Mansfield Street, Munson Street and Hillside Terrace to provide for a curb extension on the southeast corner of the intersection, improved pedestrian ramps that will be ADA compliant, striping of new crosswalks, and the addition of stop bars would adequately protect the safety of motorists and pedestrians.[3]

[3] Since PDD #49 was created, the City Plan Commission has allowed a number of other minor modifications to the General Plans for the Planned Development District.

III. CURRENT USES IN PDD #49

For many years, Science Park had been underutilized. As a result of the significant investment by the State of Connecticut, the City of New Haven, Olin, USRAC, Yale University, and multiple private developers in the development of several parcels in the PDD, approximately 2000 jobs have been brought to Science Park, significant portions of Science Park have been environmentally remediated and new construction or substantial rehabilitation of existing structures has occurred. There are still, however, a number of underutilized Parcels that either contain parking lots or dilapidated unsafe abandoned structures and that need to be redeveloped, as described below. The current uses of each Parcel are summarized below.

A. Parcel A (460 Prospect Street)

Parcel A (460 Prospect Street) (see Appendix 6, Revised Drawing #5) is owned by Yale University. Years ago, Parcel A was planned to be a conference center, which was never realized, and, currently, the Parcel is used for open space and community gardens.

B. Parcel B (300 Mansfield Street, 320 Mansfield Street, 50 Division Street, 375 Winchester Avenue, 395 Winchester Avenue, Winchester Avenue)

Parcel B has six lots with three different owners, which are as follows:

1 300 Mansfield Street and 320 Mansfield Street are owned by the Highville Charter School Inc. and include a former office building converted to a charter school and adjacent parking and recreation areas;

2 The northeastern portion of Parcel B (50 Division Street) is owned by Yale University and includes an office building (Building Two) and a parking lot;

3 The northwestern portion of this property at the corner of Winchester Avenue and Division Street (375 Winchester Avenue) is owned by SPDC and is used as a parking lot for Building 4 on Parcel C; and.

4 Sheffield Avenue Extension on Parcel B will run through properties owned by SPDC and known as 375 Winchester Avenue, 395 Winchester Avenue and Winchester Avenue (Parcel Sp- 1-B-1).

C. Parcel C (375 Winchester Avenue, 395 Winchester Avenue)

Parcel C is owned by SPDC and includes two converted factory buildings, Building 4 (375 Winchester Avenue) and Building 5 (395 Winchester Avenue). These buildings are used for office and lab space for biotech users and for office spaces for non-profits, including the Connecticut Center for Arts & Technology ("ConnCAT"), the Connecticut Community Arts Revitalization Project ("ConnCORP") and SPDC's Literacy and Resource Center.

D. Parcel D (344 Winchester Avenue)

In 1994, a new manufacturing facility was constructed by USRAC on Parcel D to replace its facility located on the corner of Winchester Avenue and Munson Street (Parcel L). USRAC used this building until 2006. This building was renovated in 2010 and is used for offices, a data center, a facilities management office, a shop/assembly, and a warehouse for Yale University.

E. Parcel E

Parcel E (along Division Street) has been developed with housing and is privately owned.

F. Parcel G (276 Winchester Avenue)

Parcel G (276 Winchester Avenue) is owned by Fenix I LLC and includes a chilled water facility and an 1,186-space garage with retail on the ground floor.

G. Parcel J (25 Science Park) (150 Munson Street)

Parcel J (150 Munson Street) is owned by WE 150 Munson Street and is an office/lab building of over 250,000 square feet.

H. Parcel K (291 Ashmun Street, 309 Ashmun Street, 176-178 Canal Street)

Parcel K (291 Ashmun Street, 309 Ashmun Street and 176-178 Canal Street) was recently acquired by a private developer. On February 16, 2022, the New Haven City Plan Commission granted Site Plan and Detailed Plans approval for a mixed-use building containing 176 apartments, up to 3,000 sf of commercial space on the first floor, parking, and community/amenity space.

I. Parcel L (275 Winchester Avenue, 315 Winchester Avenue and 270 Mansfield Street)

The southwestern portion of 275 Winchester Avenue, known as the Western Courtyard, has been redeveloped with a 134,000 square foot office/laboratory building (115 Munson Street), currently known as Winchester Works. The building is comprised of two of the former Winchester factory buildings and a connecting glass atrium. 115 Munson Street is ground leased by an SPDC affiliate to an affiliate of the Developer. To the west of the Winchester Works Building and also located on 275 Winchester Avenue, six of the former Winchester factory buildings have been renovated into 158 loft style apartments known as Winchester Lofts. Winchester Works and Winchester Lofts, which

make up 53% of buildings on Parcel L, have been built to the exacting standards required for Historic Tax Credits.

To the north of the Winchester Works and Winchester Lofts, property known as 315 Winchester Avenue has been used as a parking lot for Winchester Lofts, Winchester Works and Buildings 4 and 5 (395 and 375 Winchester Avenue on Parcel C). Recently, on May 18, 2022, the City Plan Commission granted Site Plan and Detailed Plans approval to an affiliate of the Developer to construct a mixed-use building on 315 Winchester Avenue which will contain approximately 285 units and approximately 12,000 square feet of retail. The approval also included an approval of a public plaza to be known as Mason Place to be located on the northwestern portion of 275 Winchester Avenue, a 196-space parking lot on 270 Mansfield Street, and two private streets, Sheffield Avenue Extension, and Mason Street, previously discussed.

IV. PROPOSED AMENDMENTS TO PDD # 49

A. Purpose of Amendments

The purpose of the proposed amendments to PDD #49, as was true for 2010 PDD Amendment that added Parcel L, is to encourage mixed-use office, lab, residential, and retail development in Science Park. This purpose will be accomplished by adding New Parcel M to PDD #49. New Parcel M is currently an underutilized parking lot located across Munson Street from the Winchester Works lab building. The purpose of the requested amendments is also to provide for the same types of new economy businesses, office, lab, residential, and retail uses on New Parcel M, which are permitted on Parcel L. Currently, the properties that comprise Parcel M are zoned Business A District ("BA") which does not permit lab use. The PDD Amendments will also allow for

the demolition of contaminated and deteriorated buildings in the Eastern Courtyard on 275 Winchester Avenue in order to allow for a new development on this site. Additionally, the amendments will extend the uses permitted on Parcel L to Parcel B, Parcel C and New Parcel M, including residential use. These amendments will build on the successes of the developments on Parcels D, G, J, and L by creating new land for new mixed-use developments, which will provide opportunities for construction and permanent jobs as well as for the growth of the tax base of the City.

B. The Applicants

1. SPDC

SPDC is a 501(c)(3) Connecticut corporation founded in September 1981 by the City of New Haven, the State of Connecticut, Yale University, and Olin to oversee the redevelopment of the Science Park area, apply for governmental and other grants and loans and receive properties from Olin as they were surplused. As stated above, SPDC and its affiliates own all of Parcels C and L, the western portion of Parcel B, and New Parcel M.

2. Winchester Holdco LLC (the Developer)

The Developer is a Delaware limited liability company that is a joint venture between Twining and LMXD. The Developer is the manager of Winchester Office, LLC that was formed to acquire and redevelop 115 Munson Street, the former Higher One office, into lab space. The Developer will develop new buildings on New Parcel M, the Eastern Courtyard (Parcel L) and the western portion of Parcel B. SPDC and certain of its affiliates have executed a Redevelopment Agreement with the Developer for the Developer to develop and eventually own these Parcels.

a. Twining

Twining is an owner, developer and manager of a diverse portfolio of premier real estate property located in the Northeast Corridor of the United States, from New York City to Boston. Twining has developed over $1 billion of complex urban mixed-use developments, mostly at transit locations. Twining's institutional capital partners include Goldman Sachs Urban Investment Group, Morgan Stanley, Principal Insurance, Mass PRIM, and Northwood Investors.

b. LMXD

LMXD is an affiliate of L + M Development Partners ("L+M"), which was founded in 1984 to develop affordable, mixed income, and market rate housing in urban markets with a focus on strengthening the neighborhoods in which it works. LMXD builds on L+M's 35-year history of forming impactful public-private and community partnerships in cities and neighborhoods where it develops. Using innovative finance and a deep real estate expertise, LMXD develops dynamic urban communities that offer a high level of quality and service to residents with a wide range of incomes.

C. The Expansion of PDD #49 to Include New Parcel M

1. Description of New Parcel M

New Parcel M is an 77,970 sf (1.7899 acre) site that is comprised of three legal parcels located at 88 Munson Street (M/B/P 257-0356-02600 (portion)), 110 Munson Street (M/B/P 257-0356-02700) and 116 Munson Street (M/B/P 257-0356- 02500). Parcel M is bordered on the north by Munson Street. A legal description of New Parcel M is set forth in Appendix 2. Parcel M is currently located in the General Business (BA) Zone. The BA zoning district permits office and residential use but does not permit lab use.

2. Historical Background and Current Uses of Parcel M

New Parcel M has been utilized since 2008 as a parking lot, and a portion of New Parcel M (88 Munson Street) was historically used as a parking lot for the Winchester factory workers. Parcel M is currently used as a parking lot for tenants at 115 Munson Street (Winchester Works).

3. General Plans for the Development of Parcel M

a. General Plans

The Developer currently plans to develop Parcel M as an office/lab building or a mixed-use residential and retail building. Appendix 6, Revised Drawing #6. The building will be designed to be compatible with the existing historic structures both in its massing and scale. The frontage of the building on Munson Street will be landscaped with trees and appropriate plantings to be reflective of the landscaping across the street in front of the Winchester Works and Winchester Lofts buildings. Because the uses for this Parcel are uncertain, the Use Table has been amended to include other possible uses for Parcel M. The parking for the new building on Parcel M is planned to be located in the Eastern Courtyard on 275 Winchester Avenue (Parcel L), across the street from Parcel M once the buildings on that site have been demolished. There may be a loading dock for the New Parcel M Building at the rear of the Building.

D. Parcel L Amendments

1. Demolition of Buildings in the Eastern Courtyard

The Eastern Courtyard includes buildings from the Winchester Factory which the 2010 PDD Amendment contemplated would be rehabilitated for residential use (Buildings 7A, 8A, 26A, 31A, 32A, 33A and 34A) (the “Proposed Rehabilitated Buildings”). The 2010 Amendment also provided that Buildings 9A, 27A and 35A in the Eastern Courtyard would

be demolished and noted that SHPO and NPS had provided preliminary approval for the demolition of these buildings.

a. The Concrete Buildings (Buildings 26A, 27A, 31A, 32A, 33A, and 34A).

In the process of preparing plans for the rehabilitation of the Proposed Rehabilitated Buildings, a detailed environmental assessment by Langan Engineering revealed that the oil that had been used to manufacture guns had seeped into the floors, walls and columns of the five massive concrete buildings (Buildings 26A, 27A, 31A, 32A, 33A, and 34A). Detailed studies were conducted to determine a method for sealing the oil into the concrete, and it was eventually concluded that there was no viable solution that would contain the oil and its odors over the long term. Furthermore, in testing the oil, it was revealed that it contained a highly toxic chemical compound. The Connecticut Department of Health, in reviewing the testing conducted by Langan Engineering, found that contamination in the slabs of the buildings posed an unacceptable risk to future occupants of the buildings and that even brief periods of exposure could be unacceptable. The Department of Public Health wrote:

> Even with all the uncertainties discussed in this document, these multiple lines of evidence indicate that contamination levels off-gassing from the contaminated concrete slabs could pose an exposure concern for any future human occupancy, even brief exposure frequencies and durations. And for this reason, we cannot conclude that future use of the Tract A Buildings for human occupancy would be safe.

See Letter from the Department of Health in Appendix 3). In accordance with this guidance, the Demolition Plans have been revised to indicate that the concrete Buildings (Buildings 26A, 27A, 31A, 32A, 33A, and 34A) on Parcel L will be demolished. See Appendix 6, Revised Plan #4.

b. Buildings 7A, 8A and 9A

Buildings 7A, 8A and 9A have brick exterior walls with timber columns, beams, ceilings, and floors. As stated above, the 2010 PDD Amendment contemplated that Building 9A would be demolished, and SHPO and NPS preliminarily approved the demolition of Building 9A.

Additionally, the City of New Haven's Office of Building Inspection and Enforcement determined that Building 9A represented a life safety hazardous condition and needed to be demolished. Moreover, a structural assessment report was completed for Buildings 7A, 8A and 9A. This report revealed a high level of deterioration in the majority of the exterior brick work with many failed beams and columns causing roof and floor collapse. Since the date of the report, further deterioration has occurred, such that Buildings 7A and 8A, like Building 9A, are in danger of collapse. Accordingly, the Demolition Plan, Appendix 6, Revised Drawing #4 indicates that Buildings 7A, 8A and 9A are scheduled to be demolished.[4]

2. General Plans for the Eastern Courtyard on Parcel L

a. Remediation

Once the buildings in the Eastern Courtyard have been demolished, the soil will be remediated.

b. Sheffield Avenue Extension to Munson Street and Sheffield Place

S Depending on the footprint of the building to be constructed in the Eastern Courtyard, Sheffield Avenue may be extended from Mason Street to Munson Street...

[4] In the event that State funds are received for the improvements described in this Petition and SHPO requires alterations to the demolition plans in connection with such funding, the Applicants request that the General Plans be considered to have been amended to comply with such requirements. For example, if a wall was to be retained as a relic of the history of the site, the demolition plans should be treated as having been amended to comply with this requirement.

Also, depending upon the location of the building to be constructed on the Eastern Courtyard, and the conditions of the soil and the property in the Eastern Courtyard once the factory buildings at this location are demolished, the Developer may construct a small park in this area, which will be known as Sheffield Place. (See Appendix 6, Revised Drawings #5 and 6). The park will be privately owned and maintained but will be publicly accessible.

c. General Plans for the Eastern Courtyard

The Eastern Courtyard will include a parking deck. A new building will be built either on top of or next to the parking deck and will be devoted to office lab or mixed-use residential and retail. The parking deck will be large enough to accommodate the parking required for the developments on Parcel M and the Eastern Courtyard. See Appendix 6, Revised Drawing #6. In the event that the building is used for residential use, the Developer will comply with the commitments with respect to affordable housing made in connection with the 2010 Amendments, which is that 20% of the residential units on Parcel L will be restricted to individuals whose average income is 50% or less than the Area Medium Income for the New Haven-Meriden Metropolitan Area, provided that Tax Exempt Bonds and 4% Low Income Tax Credits are made available to the Developer.[5]

E. Amendment of General Plans for Parcel B

The General Plans for Parcel B have been revised to depict a building in the northwest corner of Parcel B. Appendix 6, Revised Drawing #6 (The 1985 amendment to PDD #49, Illustrative Site Plan #6 showed a building in that corner). This building may be

[5] This affordable housing commitment will also apply to any residential buildings constructed on Parcels B, C and M.

a mixed-use residential and retail building or an office lab above a parking deck. The Use Table has been modified to allow for a number of uses not currently permitted on Parcel B, including residential use. Parking for Building 4 and for this new Parcel B Building will be in accordance with a Shared Parking Agreement which is currently the case for parking for Winchester Lofts, Winchester Green, Winchester Works, and Buildings 4 and 5. In addition, the Developer will encourage its residents and employees to walk, bike and use car share services and will work with the City and Yale University to coordinate transit options.

F. Dimensional, Bulk and Parking Deviations for Parcels B, C, L, and New Parcel M

PDD #49 includes a number of dimensional controls. PDD #49 also provides that where zoning requirements are not modified by PDD #49, with the exception of provisions relating to use of property, all other requirements of the IH, and the IL Districts, with respect to Parcels J and K, will apply. Attached as Revised Appendix 5 is a Revised Table of Deviations from the PDD #49 controls, the IH zone requirements, and the BA requirements (with respect to Parcel M) being requested for Parcels B, C, L, and M, as applicable. With respect to Parcel M, if a deviation from the requirements of the BA district is not set forth in Appendix 5, the requirements of the BA district, other than use, shall apply.

This PDD amendment contemplates the construction of at least three new buildings. In order for these new buildings to be compatible with the remaining historic Winchester Factory buildings, to activate the streetscapes in Science Park and to promote density, modifications of certain of the PDD #49 controls as well as the applicable Zoning Ordinance bulk and dimensional requirements are necessary. These modifications

include a request that new buildings on Parcels B, C, L, and M have no yards, that there be no height restrictions for such buildings and that the FAR for the buildings be increased to 6. These provisions are similar to the yard, bulk and height provisions for the Central Business Districts in New Haven. The uses in PDD #49 are similar to those permitted in the Central Business Districts which require large structures for commercial, laboratory and mixed income and mixed residential and retail uses. These provisions will also permit the development of buildings that are compatible with the historic Winchester buildings which are large and tall buildings with no yards.

Additional changes to Appendix 5 include modifications with respect to parking requirements for residential use (1/2 space per unit) and concerning the loading requirements (one space for each nonresidential building over 100,000 square feet) as well as treating Parcel M as one Zoning Lot even though it is comprised of three legal parcels and there are two owners of these parcels.

All of these changes will contribute to a vibrant and denser Planned Development District with walkable and bikeable streets with fewer surface parking and loading spaces.

G. Addition of Uses to the Use Table

When the Science Park PDD was adopted by the Board of Aldermen almost 40 years ago, it was anticipated that Science Park would be devoted for the most part to light manufacturing, research and design and supportive office uses. In 2010, when PDD #49 was amended to include Parcel L, it was apparent that Science Park is also an appropriate home for start-up companies, general offices, labs, apartments, and retail establishments. In order to provide for the needs of the occupants of Science Park at that time and because it was difficult in 2010 to anticipate what the exact uses of the properties that

had already been developed on Parcels C, D, G and J would be in the future, the 2010 Amendment allowed retail, medical and commercial uses to be permitted on these parcels. This Amendment extends all of the Parcel L uses to New Parcel M and to Parcels B and C for the same reasons. See Amended Appendix 1, Amended Table Showing Proposed Land Uses in Planned Development District by Parcel. In particular, in order to provide flexibility in the development of Science Park and to create a lively mixed-use pedestrian oriented neighborhood both during the day and in the evening, this amendment allows residential and retail uses on Parcels B, C and M.

Finally, the PDD #49 requirement that certain permitted uses in the Science Park PDD require a Special Permit and that retail uses be limited to Winchester Avenue and Munson Street have been eliminated. The Applicants believe that sufficient experience with some of these uses in Science Park indicates that such uses do not require a Special Permit. Further, to encourage walkability in Science Park, the Applicants wish to be able to locate retail uses in additional locations, such as on Division Street and on the new private roads, Sheffield Avenue Extension and Mason Street.

H. Sustainability

The Developer is committed to sustainable principles in the development of Parcels B, C, L, and M. The Developer intends to reduce energy consumption and other operating costs, install appropriate insulation, reduce waste, conserve natural resources, and explore whether renewable energy sources are appropriate for the buildings to be constructed on the Parcels. The Developer will also explore seeking sustainable building certificates and will limit storm water runoff to the storm sewer system in accordance with the City's regulations. Additionally, for the residential portions of the developments, the Developer will make best efforts to construct all electric buildings so long as electricity

remains the most sustainable energy source. The Developer will also review the possibility of installing EV charging stations in its parking facilities.

I. Traffic Study

The Developer has conducted a Traffic Study dated February 7, 2022 regarding the traffic impacts of the proposed amendments to PDD #49 as well as the recently approved Winchester Green Building on Parcel L. The Traffic Study is attached as Appendix 4. The Traffic Study notes that Sheffield Avenue Extension and Mason Street will provide significant improvements to street connectivity and vehicular access and that excellent transit service is available to and from Science Park via CT Transit and the Yale Shuttle service. The Traffic Report notes that a combination of bike lanes and sharrows connect the site to the Farmington Canal Greenway and the bike lanes on Prospect and George Streets. The Traffic Study concludes that the proposed amendments will not significantly impact traffic operations on the nearby City roadway network and recommends certain traffic improvements at specified intersections, including changing signal phases and timings, providing dedicated turn lanes, restriping the roadways, and removing portions of on-street parking.

V. CONSISTENCY OF APPLICATION WITH PLANNED DEVELOPMENT DISTRICT STANDARDS

The proposed amendments to PDD #49 fully comply with the four standards for a planned development district set forth in Section 65(a) of the Zoning Ordinance, which are as follows:

A. In Accordance with Comprehensive Plans of the City

In order for a planned development to be eligible for designation as a planned development district, the development must be "(1) [i]n accordance with the

comprehensive plans of the city, including all plans for redevelopment and renewal." The proposed amendments are in accordance with the Comprehensive Plan of Development for New Haven, entitled "New Haven Vision 2025." Vision 2025 recommends that dramatically new neighborhood forms at select locations, including Science Park, should be encouraged (pp. xxv and IV-36). The Plan also calls for neighborhood revitalization around Job Centers such as Science Park (pp.xivii and IV-17). Vision 2025 urges planning that promotes "better integration of Science Park with the adjacent residential neighborhoods." (pp. IV-19 and IV-36). The proposed PDD Amendments comply with these recommendations. The developments proposed by the PDD Amendments will create dramatically new neighborhood forms, including lab buildings and new residential/retail mixed-use buildings as well as a private park and an extension of a historic Street, Sheffield Avenue Extension. These improvements will provide jobs, shopping, entertainment, and housing opportunities for the residents of Newhallville and the Dixwell neighborhoods. The requested Amendments will promote neighborhood revitalization and better integrate Science Park with the adjacent neighborhoods by replacing parking lots and dilapidated buildings with new buildings, restaurants and parks that will be connected to the neighborhoods by private streets.

B. Composed of Appropriate and Necessary Uses

A second criterion for a planned development under § 65(a) is that the planned development be composed of uses in such proportions as are most appropriate and necessary for the integrated function of the planned development and the City. The uses proposed for Parcels B, C, L, and M – office, lab, residential, and commercial, including retail, will contribute to making PDD #49 a lively and safe area both during the day and in

the evening. The uses proposed for these Parcels will increase the population of Science Park, provide opportunities for services and retail in the overall neighborhood, re-open historic streets, and create open space, thereby maintaining a “Sense of Place” that is unique to New Haven. Additionally, such uses will create jobs, increase taxes and provide badly needed housing in the City, including affordable housing. In sum, the proposed amendments will remove long vacant and deteriorated structures and parking lots and replace them with new buildings that are appropriately scaled to the historic urban design and massing of the factory buildings and which will continue the revitalization of Science Park which has occurred during the last forty years.

C. Designed to Produce Stable and Desirable Environment

The third criterion for a planned development district under § 65(a) is that the planned development be “[s]o designed it its space allocation, orientation, texture, materials, landscaping and other features as to produce an environment of a stable and desirable character, complementing the design and values of the surrounding neighborhood, and showing such unusual merit as to reflect credit upon the developer and upon the city.” § 65(a)(4). As stated above, the development of Parcel M will allow the replacement of a parking lot with a new building that complements the surrounding neighborhood. The building to be constructed on Parcel M and the other new buildings will be designed to be contextual with the historic buildings in Science Park. Additionally, a substantial amount of open space and landscaping areas are planned for the development. See Appendix 6, Revised Drawing #5.

D. Provision of Open Space

The last criterion for a planned development district in which residences will be located is that 250 square feet of usable open space must be provided for each residential unit on the PDD Tract. As shown on Appendix 6, Revised Drawing #5, there are currently at least 175,500 square feet of usable open space on the PDD #49 Tract which can be used to satisfy this requirement. These open spaces are located along the Farmington Canal Heritage Trail (and not used as open space for the Parcel K residential building[6]), in the park on Parcel G and on the Building 4 Parcel. In addition, the Applicant anticipates that additional open space will be created when the new buildings are designed, including interior courtyards, roof decks and landscaped yards.

VI CONSISTENCY WITH CHARTER PROVISIONS

Article XIII, Sec. 2 (C) requires that a zoning regulation (which the PDD Amendment is) be in accordance with a comprehensive plan, secure safety from fire, panic and other dangers, promote health and the general welfare, provide adequate light and air, prevent the overcrowding of land, avoid undue concentration of population, facilitate the adequate provisions for transportation, water, sewage, schools, parks and other pubic requirements and be made with (1) reasonable consideration as to the character of the district and its peculiar suitability for particular uses and (2) with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout the City. For the reasons stated above, the PDD amendments proposed by this Petition satisfy these criteria.

[6] 16,300 square feet of the Farmington Canal Heritage Trails is being used to satisfy the open space requirements of the proposed Parcel K residential building.

VII. CONCLUSION

This Petition, which proposes a redevelopment of vacant parking lots and land on which long-vacant historic factory buildings on a Brownfield have been located in New Haven in order to create a lively mixed-use development, fully satisfies all of the criteria for a planned development district under § 65 of the Zoning Ordinance. The development described in this Petition will remove blight and surface parking lots that have a negative impact on the surrounding neighborhoods, attract other new investment to Science Park, make Science Park a magnet for new economy businesses, provide badly needed additional housing, including affordable housing, and create dynamic mixed-use developments.

For the foregoing reasons, the Applicants request that the Board of Alders amend the New Haven Zoning Ordinance and the New Haven Zoning Ordinance Map to expand Planned Development District #49 to include New Parcel M, approve the General Plans for the construction of new buildings in the Eastern Courtyard within Parcel L and on Parcels B and M, permit the uses set forth in Amended Appendix 1, and approve the zoning modifications described in Revised Appendix 5. A proposed Ordinance is attached behind Appendix 7.

Respectfully submitted,
THE APPLICANTS

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APPENDIX

1 Appendix 1 – Table A Showing Proposed Land uses in Planned Development District by Parcel

2. Appendix 2 - Legal Description of New Parcel M

3. Appendix 3 – Letter from the Department of Health

4. Appendix 4 – Traffic Study

5. Appendix 5 – Table of Deviations from PDD #49 Controls and the Zoning Ordinance

6. Appendix 6 – General Plans

7. Appendix 7 – Proposed Ordinance

Appendix 1

Use Table

Amended Appendix 1

AMENDED TABLE SHOWING PROPOSED LAND USES IN PLANNED DEVELOPMENT DISTRICT BY PARCEL

Science Park PDD

(Amendments are in bold type or blacklined; note New Parcel M)

	Parcel									
	A	**B**	**C**	**D**	**E**	**G**	**J**	**K**	L	***M***
Conference Center	X	X	X	X	X	X	X			
Research or testing laboratories with no limit as to floor area		X	X	X		X	X		X	***X***
Light Manufacturing		X	X	X		X	X		X	***X***
On-site or off-site parking lots or parking structures for employees, customers or visitors for any permitted use, or commercial or public parking lots or parking structures, excluding auto sales, service or rentals	X	X	X	X	X	X	X	X	X	***X***
Overnight lodging, restaurant, lounge, banquet facilities and recreational uses, all of which are permitted only in conjunction with a conference center	X	X	X							
Printing, engraving or other reproduction services, with no limit as to floor area[1]		X	X	X		X	X		X	***X***
News distribution enterprises		X	X	X			X			
Employment agencies	X	X	X	X	X	X	X		X	***X***
Establishments selling food for immediate consumption on or off premises		X	X	X	X	X	X		X	***X***
Single-Family, two-family and multi-family dwellings, nurseries and day care centers and uses permitted as of right in a RM2 zone[2]		***X***	***X***		X			X	X	***X***

[1] *On Parcels L & M, printing, engraving or other reproduction services using non-digital processes shall be limited to 2,000 square feet of gross floor area.*

[2] *On Parcels B, C, L, & M, only multi-family dwellings, nurseries and daycare centers and uses permitted as of right in a RM2 zone will be allowed but not single and two-family dwellings.*

	A	B	C	D	E	G	J	K	L	*M*
General, utility, wholesaling or distribution, radio or television station, charitable and philanthropic office uses, and offices incidental to a use otherwise permitted in the Planned Development District	X	X	X	X	X	X	X		X	***X***
Banks or other credit agencies	X	X	X	X	X	X	X		X	***X***
Personal Services (see use table, Zoning Ordinance, 42, part D), excluding driving schools, and funeral homes		X	X	X	X	X	X		X	***X***
Medical Practitioner's Offices		***X***	X	X	X	X	X		X	***X***
Warehousing		X	X	X		X	X			
Secondary School/Educational Use		***X***	X							
3										
Health club, gyms, personal training with associated classes*		***X***	X	X		X	X		X	***X***
Movie, film, television, video game, animation, and entertainment production services, including multimedia services, and supporting services and eligible entertainment related industries as defined by Conn. Gen. Stat. § 32-76 and Reg. Conn. St. Agencies § 32-76-2*		***X***	X	X		X	X		X	***X***
Hotel, Bed & Breakfast, Inn or Tourist Home, with no limit as to number of rooms		***X***	***X***						X	***X***

[3] This category is already provided

	A	B	C	D	E	G	J	K	L	M
Eating, drinking places and entertainment (See use table, Zoning Ordinance, 42, part E), including an establishment selling food for immediate consumption on or off premises, Restaurant or other establishment selling or serving or permitting the immediate consumption of alcoholic beverages on or off premises, including accessory entertainment, excluding drive-in establishment, adult entertainment establishments, adult cabarets theaters over 250 seats; billiards and pool halls[4],		***X***	X	X		X	X		X	***X***
Sale of food, drink and pharmaceuticals (see use table, zoning ordinance, 42, part C)		***X***	X	X		X	X		X	***X***
General merchandise and clothing (See use table, Zoning Ordinance, 42, part G)		***X***	X	X		X	X		X	***X***
Personal Goods (see use table, Zoning Ordinance, 42 part H) excluding gun shops		***X***	X	X		X	X		X	***X***
Home Goods and Furnishings – (See use table, Zoning Ordinance, 42 part I)		***X***	X	X		X	X		X	***X***
Financial services (see use table, zoning ordinance 42, Part J)		***X***		X		X	X		X	***X***
Public access park or community garden		***X***		X		X	X		X	***X***
Caterer		***X***	X	X		X	X		X	***X***
Establishment selling or renting office equipment and supplies and business machines and scales		***X***	X	X		X	X		X	***X***
Antenna or wireless site on an existing structure or on new tower (subject to section 49, standards), transmitting tower for radio and televisions stations		***X***	X	X		X	X		X	***X***
Music or Dancing School		***X***	X	X		X	X		X	***X***
Interior decorator, upholsterer, furniture repairer, with no limit as to floor area		***X***	X	X		X	X		X	***X***

[4] *Where this table refers to sections in the Zoning Ordinance, in the event that any such section is repealed, the uses set forth in the referenced section on the date of the repeal shall be allowed.*

	A	B	C	D	E	G	J	K	L	*M*
Medical Practitioners' Offices of over 5,000 square feet gross floor area, outpatient clinic, public health center, outpatient surgical facility , imaging center, home health agency, clinical laboratory, medical walk-in clinic, assisted living service agency, outpatient physical and/or occupational therapy office, outpatient chronic dialysis facility, community health center as defined in section 19a-490a, outpatient facility operated by a nonprofit educational institution exclusively for students, faculty and staff of such institution and their dependents, family planning or reproductive health services clinic, primary care clinic, sports medicine clinic, emergency services clinic, adult day care center, wellness center, mental health center, dental offices, and optometrists' offices		***X***	X	X		X	X		X	***X***
Professional, Government and Service offices		***X***	X	X		X	X		X	***X***
Veterinarian and animal groomer with all facilities within enclosed building(s) excluding kennels		***X***	X	X		X	X		X	***X***
Non-profit recreation facilities, community centers, clubs, non-profit cultural activities, non-profit social organizations, museum		***X***	X	X		X	X		X	***X***
Uniform sales and rentals		***X***	X	X		X	X		X	***X***
Art Gallery		***X***	X	X		X	X		X	***X***
Business schools and training facilities		***X***	X	X		X	X		X	***X***
Data processing and computer centers, including service and maintenance of electronic data processing equipment		***X***	X	X		X	X		X	***X***
Live/Work spaces (spaces used jointly for commercial purposes permitted in the Planned Development District and also for residential purposes), not subject to Zoning Ordinance Section 18 standards		***X***							X	***X***
High technology service use (a use which has as its principal function the providing of services, including computer information transfer, communication, distribution, management, processing, administrative, laboratory, experimental, developmental, technical, or testing services)		***X***	X	X		X	X		X	***X***

	A	B	C	D	E	G	J	K	L	*M*
High technology industrial use (a use which has its principal function light manufacturing, assembly, fabrication or machining from processed materials, including but not limited to agricultural technology, biological or pharmaceutical research, software technology, telecommunications, biomedical technology, fluid transfer and handling technology, defense and aerospace technologies or other technology oriented or emerging industrial or business activity)		***X***	X	X		X	X		X	***X***
Research, development, engineering, design, assembly, fabrication and light manufacturing of high-technology equipment, including equipment used in high technology industrial uses, instrumentation and computer software		***X***	X	X		X	X		X	***X***
Home improvement company, general contractor, special trade contractor, and sign maker		***X***	X	X		X	X		X	***X***
Retail and wholesale bakeries and food processing up to 5,000 square feet of gross floor area, but excluding fish and meat processing		***X***	X	X		X	X		X	***X***
Assisted living, elderly and disabled housing home for the aged, and rest homes		***X***	X	X		X	X		X	***X***
[5]										
Accessory Uses Incidental to uses permitted In PDD #49 either as of right or by special permit		***X***	X	X		X	X		X	***X***

[5] This use category was eliminated because it was repetitive of previous uses categories

Appendix 2

Legal Description of New Parcel M

LEGAL DESCRIPTION OF NEW PARCEL M

BEGINNING AT A POINT MARKING THE INTERSECTION OF THE SOUTHERLY STREET LINE OF MUNSON STREET AND THE NORTHWESTERLY CORNER OF #116 MUNSON STREET;

THENCE RUNNING SOUTHEASTERLY ALONG THE SOUTHERLY LINE OF MUNSON STREET AND THE NORTHERLY LINE OF #116, #110, AND TRACT J, IN ALL, S85°39'40"E, A DISTANCE OF 310.18 FEET TO A POINT;

THENCE RUNNING SOUTHWESTERLY ALONG THE EASTERLY LINE OF TRACT J, S03°24'49"W, A DISTANCE OF 159.71 FEET TO A POINT;

THENCE RUNNING IN A WESTERLY DIRECTION THROUGH TRACT J A DISTANCE OF 82 +- FEET TO A POINT;

THENCE RUNNING IN A SOUTHERLY DIRECTION THROUGH TRACT J A DISTANCE OF 80 +- FEET TO A POINT;

THENCE RUNNING SOUTHWESTERLY ALONG THE SOUTHERLY LINE OF TRACT J THE FOLLOWING 4 COURSES;

S84°30'09"W, A DISTANCE OF 200+- FEET TO A POINT;

N21°07'00"W, A DISTANCE OF 30.00 FEET TO A POINT;

S88°22'39"W, A DISTANCE OF 63.00 FEET TO A POINT;

S85°04'09"W, A DISTANCE OF 87.00 FEET TO A POINT IN THE EASTERLY STREET LINE OF WINCHESTER AVENUE;

THENCE RUNNING NORTHWESTERLY ALONG THE EASTERLY LINE OF WINCHESTER AVENUE AND TRACT J, N18°37'21"W, A DISTANCE OF 38.00 FEET TO A POINT THE SOUTHEASTERLY CORNER OF #235-#237 WINCHESTER AVENUE;

THENCE RUNNING NORTHEASTERLY ALONG THE SOUTHERLY LINE OF #235-#237 WINCHESTER AVENUE, IN COMMON WITH THE WESTERLY LINE OF TRACT J, N88°13'19"E, A DISTANCE OF 38.00 FEET TO A POINT AT THE SOUTHEASTERLY CORNER OF #235-#237 WINCHESTER AVENUE;

THENCE RUNNING NORTHWESTERLY ALONG THE EASTERLY LINE OF #235-#237 WINCHESTER AVENUE, IN COMMON WITH THE WESTERLY LINE OF TRACT J, N03°14'21"W, A DISTANCE OF 45.00 FEET TO A POINT AT THE NORTHEASTERLY CORNER OF #235-#237 WINCHESTER AVENUE AND IN THE SOUTHERN LINE OF #241-#245 WINCHESTER AVENUE;

THENCE RUNNING SOUTHEASTERLY ALONG THE SOUTHERLY LINE OF #241-#245 WINCHESTER AVENUE, IN COMMON WITH THE WESTERLY LINE OF TRACT J, S88°38'41"E, A DISTANCE OF 10.00 FEET TO A POINT AT THE SOUTHEASTERLY CORNER OF #241-#245 WINCHESTER AVENUE AND THE SOUTHWESTERLY CORNER OF #116 MUNSON STREET;

THENCE RUNNING NORTHEASTERLY ALONG THE WESTERLY LINE OF #116 MUNSON STREET, THE EASTERLY LINE OF #241-#245 WINCHESTER AVENUE AND THE EASTERLY LINE OF #122-#124 MUNSON STREET, IN ALL, THE FOLLOWING 3 COURSES:

N03°34’27"E A DISTANCE OF 41.98 FEET TO A POINT;

S88°45’46"E A DISTANCE OF 0.49 FEET TO A POINT;

N04°19’32"E A DISTANCE OF 135.07 FEET TO A POINT, SAID POINT BEING THE POINT AND PLACE OF BEGINNING OF THE HEREIN DESCRIBED PARCEL M;

Appendix 3

Letter from Department of Health

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

Deidre S. Gifford, MD, MPH
Acting Commissioner

Ned Lamont
Governor
Susan Bysiewicz
Lt. Governor

Environmental Health Section

To: Alexandra Daum, Deputy Commissioner, DECD

From: Meg Harvey, Epidemiologist MLH

Subject: Evaluation of Air Data from former Winchester Arms, 275 Winchester Ave, New Haven

Date: February 17, 2021

As requested, enclosed is our evaluation of environmental data generated from a bench scale test of the volatilization potential from contaminated concrete in Building 34A of the former Winchester Repeating Arms site located at 275 Winchester Avenue in New Haven.

Please contact me if you have any questions about the information presented in our evaluation. Also, if you think it would be helpful, we would be happy to discuss our evaluation, conclusions and recommendations with you and other interested parties.

Evaluation of Environmental Data from the Former Winchester Repeating Arms Site

275 Winchester Avenue, New Haven, Connecticut

February 17, 2021

Background and Introduction

The former Winchester Repeating Arms site is located at 275 Winchester Avenue in New Haven, CT. It is a 75- acre site, comprised of several buildings and structures, which manufactured rifles from the 1870's to 2006. The site itself and its building and structures are part of a historical district, so therefore any development is subject to review by the Connecticut State Historic Preservation Office (SHPO), which is part of the Connecticut Department of Economic Development. (CT DECD).

Because these are historical buildings, it has been SHPO's desire to preserve them despite the extensive contamination that resulted from historic munitions manufacturing. All of the other Winchester Repeating Arms property buildings besides the 4 listed below were remediated and redeveloped into residential and commercial properties without demolishing the buildings. The contractor for the developer of Winchester Repeating Arms, Langan Corporation, has explored several different ways to seal and treat the concrete slabs in the 4 buildings, but none of them were a suitable solution because the slabs were so badly contaminated. Floor slabs, structural columns and walls of the buildings are visibly stained and in some cases saturated with contaminants including various oils and solvents used in the gun manufacturing, cleaning, and degreasing process. More detail about the contamination is provided later in this document. CT DECD requested the assistance of Connecticut Department Public Heath (CT DPH) to determine whether contamination present in the slabs could pose an unacceptable risk to future occupants of the buildings.

The 4 buildings of concern that are the subject of this document are located in the eastern side of the Tract A Buildings of the Winchester Repeating Arms property, (31A, 32A, 33A, and 34A) (Tract A).

CT DPH had several conversations with CT DECD, the property developer and their consultant regarding possible approaches that could be used to generate environmental data that would be helpful to CT DPH in trying to answer the question of whether contamination present in the slabs could pose an unacceptable risk to future occupants of the buildings. It was agreed that off-gassing of volatile contaminants in the slabs to indoor air is the relevant exposure pathway of concern. It was also agreed that data most useful to CT DPH would be data representative of potential future indoor air concentrations (post redevelopment). One of the principal challenges with generating such data is that the buildings are completely open structures, with no enclosed spaces in which to measure chemicals that could off-gas and accumulate in indoor air. In response to the conversations mentioned above, Langan proposed and conducted a bench scale off-gassing study to generate data that would be as representative as possible of future indoor air concentrations. CT DECD requested that CT DPH review the off-gassing bench scale test data, which were generated on October 6, 2020 on the second floor

of Building 34A of Tract A of the former Winchester Repeating Arms Property, located at 275 Winchester Avenue. This letter health consultation document summarizes CT DPH's evaluation.

The location for the off-gassing bench scale test was selected because the staining was consistent with other oil-stained floors throughout all other floors of the eastern Tract A buildings. The historical operations throughout the Tract A buildings are very similar and consisted of heavy manufacturing operations. These operations included metal working, woodworking, drilling, milling, and other heavy manufacturing processes. Various oils and solvents were extensively used throughout these buildings for the manufacturing and machining of gun barrels and various metal and wooden gun parts. Solvents such as trichloroethylene (TCE), methylene chloride, and methyl isobutyl ketone were commonly used for cleaning and degreasing metal parts during the manufacturing process (Langan 2020).

Langan Corporation noted that oil contamination is present in floor slabs, structural columns, and both interior and exterior walls of all 4 Tract A Buildings. They also have noted that on warm days, the general outdoor area often smells of petroleum. In addition, concrete slab contamination in many areas is so heavy that the chemicals have penetrated the entire thickness of the 12 to18-inch-thick concrete slabs and have been observed breaking through to ceilings and walls below in numerous locations (See Appendix).

Evaluation Data

As mentioned above, on October 6, 2020, Langan conducted a bench scale test of natural volatilization (off-gassing) potential of a 2 foot by 2 foot area of contaminated concrete slab floor on the second floor of Building 34A. Detailed methodology can be found in Langan, 2020. The temperature and relative humidity levels at the time of testing were 50 to 65 degrees Fahrenheit and 10% humidity over the duration of the testing event. An acrylic shroud was placed on the concrete floor to simulate an enclosed space with a contaminated concrete floor. The shroud was left in place for 24 hours to allow contaminants in the exposed concrete slab to volatilize and collect in the acrylic shroud.

After allowing the shroud to equilibrate for 24 hours, Langan collected an air sample from the shroud and analyzed the air sample for volatile organic compounds (VOCs), tentatively identified compounds, total VOCs and toluene, and air phase petroleum hydrocarbons (APHs).

Shroud Air Test Results

Table 1 lists the contaminants detected in the air sample at concentrations exceeding health-based comparison values. For comparison values, CT DPH has selected the CT DEEP target indoor air concentrations that are based on the most current toxicity information. As shown in Table 1, TCE was detected in the sample at a concentration of 110 micrograms/cubic meter ($\mu g/m^3$) which is 110 times greater than Connecticut's proposed Industrial/Commercial and Residential Target Indoor Air Concentration (ITIAC and RTIAC) of 1 $\mu g/m^3$ (CT DEEP 2003).

In addition, methylene chloride was detected in the sample at concentrations of 660 and 920[1] $\mu g/m^3$, over 200 times greater than the CT DEEP proposed 2003 RTIAC of 3 $\mu g/m^3$ and over 300 times the ITIAC value of 17 $\mu g/m^3$.

Several VOCs (acetone, benzene, carbon tetrachloride, chloroform, ethylbenzene, isobutane, p-cymeme, styrene, toluene, trichlorofluoromethane, methyl ethyl butyl ketone, 1,24-and 1,3,5 trimethlybenzenes, and xylenes) were detected at concentrations below indoor air comparison values or no comparison value was provided for those compounds.

C5-8 aliphatics were detected at a concentration of 930 $\mu g/m^3$, approximately 7 greater than the CT DEEP RTIAC 130 and 3 times greater than the ITIAC of 330 $\mu g/m^3$ (CT DEEP 2018). C9-C12 aliphatics were detected at a concentration of 220 $\mu g/m^3$, exceeding the CT DEEP RTIAC of 115 $\mu g/m^3$ (CT DEEP 2018).

Table 1. Indoor air concentrations detected in acrylic shroud in Building 34A of former Winchester Repeating Arms and Comparison Values, October 2020.

Contaminant	Concentration ($\mu g/m^3$)	Industrial/Commercial Comparison Value ($\mu g/m^3$)	Residential Comparison Value ($\mu g/m^3$)
Trichloroethylene	110	1[#]	1[#]
Methylene Chloride	660 and 920	17[#]	3[#]
Air Petroleum Hydrocarbons: C5-C8	930	330[*]	130[*]
Air Petroleum Hydrocarbons: C9-C12	220	No Exceedance	115[*]

[#]Proposed Revisions, Connecticut's Remediation Standard Volatilization Criteria (CT DEEP 2003).
[*]Technical Support Document: Recommended Numeric Criteria for Common Additional Polluting Substances and Certain Alternative Criteria (CT DEEP 2018).

Potential Health Implications and Discussion

Bench scale testing data shows that contaminant concentrations (TCE, methylene chloride, and air petroleum hydrocarbons) are significantly elevated above Connecticut's health-based standards for indoor air in industrial and residential settings. Of particular concern is that the TCE concentration is over 100 times greater than the proposed RTIAC/ITIAC of 1 $\mu g/m^3$ and methylene chloride concentrations are 200 and 300 times greater than the proposed ITIAC and RTIAC, respectively. This is significant because it means that even exposure durations and frequencies much less than the assumptions factored into the RTIAC and ITIACs (24 hours/day, 350 days/year for residential exposure (RTIAC) and 8 hours/day, 250 days/year for industrial/commercial exposure (ITIAC)) could result in unacceptable exposures. In addition, the TCE concentrations present a very significant

[1] Methylene chloride exceeded the calibration range for the initial analysis run (estimated value of 660 $\mu g/m^3$) so it was re-run at a high dilution (20 times) which resulted in a result of 920 $\mu g/m^3$. It is standard operating procedure for labs to re-run at successively higher dilution, if needed (Langan 2020).

exposure concern because some scientific studies in humans indicate that TCE may cause harmful effects to the developing fetus and such effects could occur even with brief periods of exposure (ATSDR 2019).

Time to Reach Comparison Value Calculations

To better understand the potential indoor air concentrations that could occur once the buildings are enclosed and occupied, Langan utilized the data gathered from the shroud sample test results, coupled with some basic assumptions, to calculate the approximate time for specific target compounds to exceed a comparison value over the entire building floor area (See Langan 2020 for assumptions). In other words, they calculated whether it was likely that in a future occupied space, the off-gassing contaminants would "dilute" down to insignificant concentrations.

As shown in Table 2, Langan calculated that it would take only 1.4 hours for methylene chloride concentrations in the entire floor of Building 34A to reach the RTIAC and approximately 4 hours for TCE to reach the IARC/ RTIAC. In addition, Langan believed that these times are biased low (and therefore the time to reach comparison values are likely much lower) due to a number of reasons. Some of which are:

1. The calculated volatilization rate does not take into account potential off-gassing from contaminated concrete columns or walls.
2. Contaminants present in the building materials will likely volatilize at a higher rate when constantly heated to ambient temperatures of approximately 70 degrees Fahrenheit following adaptive use.
3. The ambient temperature of the floor slab at the sampling location during the 24-hour period was likely lower than outdoor temperatures noted based on the sheltered location of the sample.
4. If the entire bottom of the shroud was exposed to contaminated concrete instead of just a small opening, the vapor concentrations in the shroud could be up to 7 times greater.
5. Due to gravity causing the contaminants present in the concrete slabs to migrate downward, the ceilings likely contribute a much higher load of vapor to the indoor air compared to the floors (Langan 2020).

Table 2. Estimated Amount of Time Needed for the Trichloroethylene and Methylene Chloride Concentrations in Entire Second Floor of Building 34A to Exceed Residential Target Indoor Air Criteria

Contaminant	Concentration ($\mu g/m^3$)	Residential Comparison Value ($\mu g/m^3$)	Time to Reach Comparison Value (hours)
Trichloroethylene	11	1[#]	3.9
Methylene Chloride	920[*]	3[#]	1.4

[#]Proposed Revisions, Connecticut's Remediation Standard Volatilization Criteria (CT DEEP 2003).

[*]Only one concentration for methylene chloride, 920 ($\mu g/m^3$) was used to calculate the time to reach comparison value.

Uncertainties

One must emphasize that there is a large degree of uncertainty in determining how well the bench scale test data from Building 34A represent future indoor air concentrations in all Tract A Buildings. First, the shroud air measurement reflects a single point in time in one area of one floor in one building. Langan states that they expect off-gassing in other buildings and on other floors to be similar to the location they selected for the study, but it is possible that other locations could have generated much higher or lower shroud air results.

In addition, the bench scale study is not subject to real life settings with changes in variables such as in temperature and humidity. It also does not consider future heating, ventilation, and air conditioning systems that could be present in a future building. Each of these variables could impact the rate and extent of contaminant off-gassing from the slab and the level of contaminants that accumulate in the indoor air space. These uncertainties could mean that the contaminant concentrations measured in the shroud are biased either low or high. Finally, the shroud measures only the off-gassing from the floor, not what could come from the walls and/or ceilings. Thus, there is uncertainty regarding whether the air concentration beneath the shroud could be biased low.

In their report, Langan acknowledges the many areas of uncertainty in their shroud measurement. However, they conclude that taken all together, they believe that the bench scale study represents a best-case scenario and that actual concentrations within the buildings could be worse following adaptive reuse.

Conclusions and Recommendations

Based on bench scale test data reviewed for this evaluation, we conclude that contaminant concentrations are high enough to pose an exposure concern for industrial or residential use. We have come to this conclusion because concentrations of several chemicals off-gassing from the contaminated concrete greatly exceed Connecticut's health-based target indoor air concentrations for industrial/commercial and residential settings.

In addition, because concentrations exceed Connecticut's commercial/industrial and residential indoor air targets by a large margin, we also conclude that even brief periods of exposure (i.e. less than residential or commercial/industrial) could be unacceptable.

Finally, estimates of the time it would take for off-gassing contaminants to reach indoor air targets are on the order of a few hours. This means that it is unlikely that off-gassing contaminants will be diluted to low levels in a future occupied room or space.

Even with all the uncertainties discussed in this document, these multiple lines of evidence indicate that contamination levels off-gassing from the contaminated concrete slabs could pose an exposure concern for any future human occupancy, even brief exposure frequencies and durations. And for this reason, we cannot conclude that future use of the Tract A Buildings for human occupancy would be safe.

We recommend that CT DECD use the information CT DPH has presented in this evaluation to guide its decisions about redevelopment of the 4 Tract A Buildings at former Winchester Repeating Arms.

Prepared by Sharee M Rusnak, MSPH, ScD
Environmental and Occupational Health Assessment Program
Environmental Health Section

References

ATSDR 2019. Toxicological Profile for Trichloroethylene. Agency for Toxic Substances and Disease Registry. June 2019.

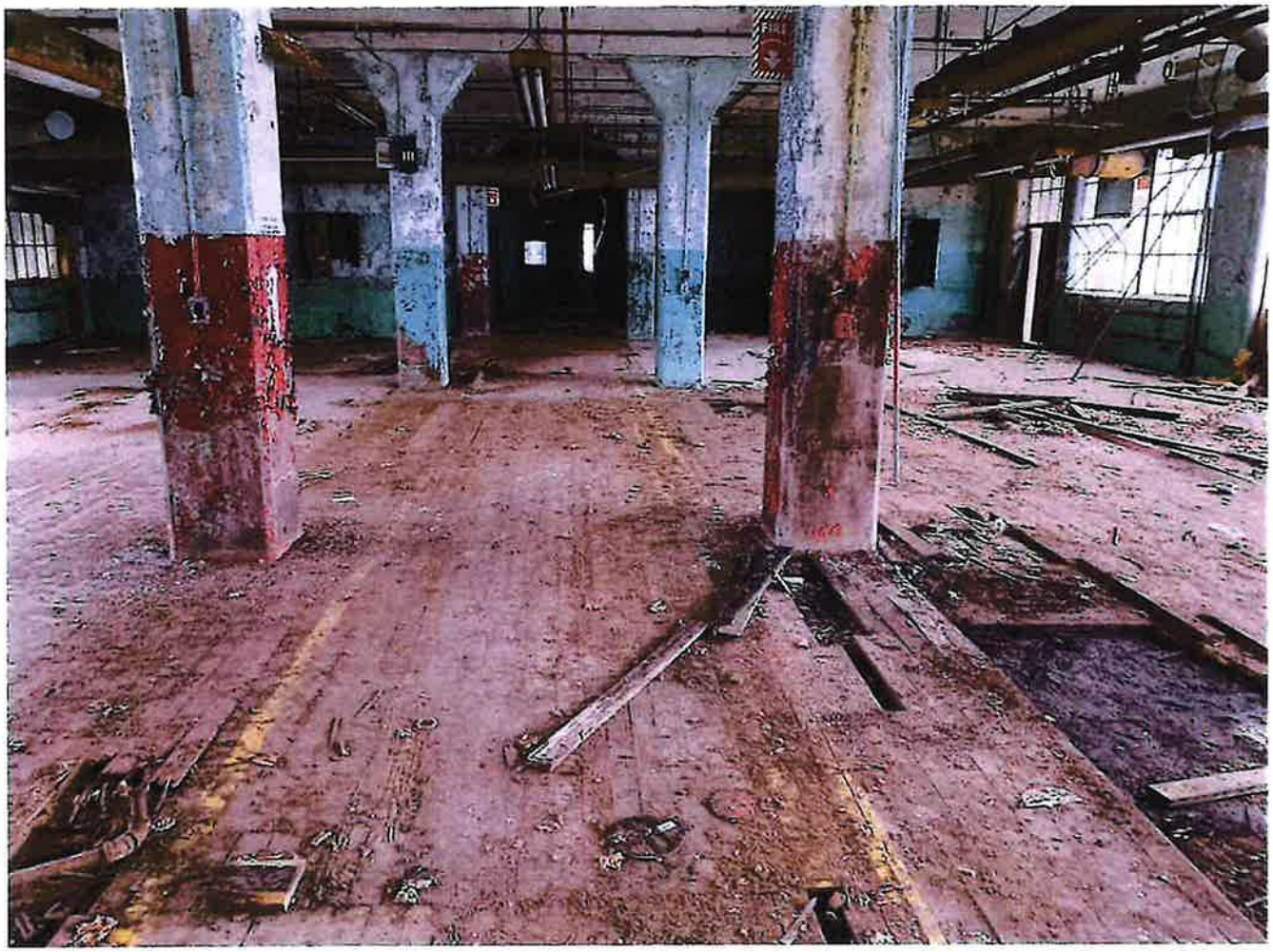
CT DEEP 2003. Proposed Revisions. Connecticut's Remediation Standard Regulations Volatilization Criteria. Connecticut Department of Energy and Environmental Protection, March 2003.

CT DEEP 2018. Technical Support Document: Recommended Numeric Criteria for Common Additional Polluting Substances and Certain Alternative Criteria. Connecticut Department of Energy and Environmental Protection, September 20, 2018.

Langan 2020. Summary of Concrete Volatilization Bench-Scale Test, Former Winchester Repeating Arms Factory, 275 Winchester Avenue, New Haven, Langan Project No. 140203902, December 31, 2020.

Appendix

Pictures of the Ceiling and Floor Contamination from the Buildings in Tract A of Winchester Arms



Appendix 4

Traffic Study

FUSS & O'NEILL

February 7, 2022

Mr. Alex Twining
President & CEO
Twining Properties
200 Park Avenue, 17th Floor
New York, NY 10166

Re: Preliminary Traffic Impact Statement
Science Park Master Plan Development
Winchester Avenue
New Haven, Connecticut
Fuss & O'Neill Reference No. 20090865.A61

Dear Mr. Twining:

Fuss & O'Neill has reviewed the impacts of your proposed master plan development on traffic conditions throughout the adjacent roadway network. This report has been prepared to document the findings of the study and will be submitted to the City of New Haven in support of the project's land use applications. This report will also be submitted to the Office of the State Traffic Administration (OSTA) in support of a Major Traffic Generator Certificate Administrative Decision Review.

Introduction

Winchester Residential Property, LLC proposes to construct a mixed-income development consisting of 1,156 residential units, 27,000 square feet of supporting retail, and 457,233 square feet of office space and life science located within the Science Park property bounded by Winchester Avenue, Munson Street, Mansfield Street, and Division Street. The existing site structures will be redeveloped or demolished to accommodate the proposed development. The site will be constructed in phases with phase one consisting of 456 residential units, 12,000 square feet of supporting retail, and 289,233 square feet of office space. Existing site driveways will continue to be utilized by the proposed development during the phase one and full build conditions. New roadways (Sheffield Avenue Extension and Mason Street) will be constructed for the full build and will run north to south and east to west, respectively, through the site. These roadways will provide a significant improvement to street connectivity in comparison to the previously approved PDD 49 on this site. In addition to improved vehicular access, excellent transit service is available to and from Science Park via CTtransit Route 234 and the Yale Shuttle service red loop. The existing road network in the area also provides a combination of bike lanes and sharrows that connect the site to

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the Farmington Canal Greenway and the City's existing bike lanes on Prospect Street and Orange Street.

The existing development currently provides 602± existing parking spaces and an additional 722± parking spaces will be provided for the proposed mixed-use development, which would therefore lead to a grand total of 1,324± parking spaces for the full master plan buildout. For the purposes of this analysis, the full master plan buildout was assumed to be completed by 2026. The site location is shown on the site location map, *Figure No. 1* of *Appendix A*.

Adjacent Roadway Network

Dixwell Avenue runs primarily north/south from Hamden south through New Haven where it terminates at the intersection with Tower Parkway/Goffe Street/Whalley Avenue/Broadway. In Hamden, Dixwell Avenue is designated as Route 10 and becomes a local road just north of the New Haven city line. Within the study area, Dixwell Avenue carries two 12-foot travel lanes, one in each direction, two 5-foot bike lanes, and two 8-foot shoulders which provide on-street parking. Sidewalks are provided on both sides of Dixwell Avenue. Dixwell Avenue is classified by the CTDOT as an urban principal arterial and has a posted speed limit of 25 miles per hour. The land uses surrounding Dixwell Avenue are primarily residential and general business.

Division Street begins at the intersection with Dixwell Avenue/West Division Street and continues east for approximately two thirds of a mile where it terminates at the intersection with Prospect Street. Division Street carries two lanes of travel, one in each direction, that vary in width between 11 and 20 feet with on-street parking allowed in some areas. There are also "sharrows" (shared bike lane symbols) located throughout. Sidewalks are provided on both sides of Division Street. Division Street is classified as an urban minor arterial by the CTDOT and has a posted speed limit of 25 miles per hour. The land uses surrounding Division Street are primarily residential and general business including the planned development district.

Winchester Avenue runs primarily north/south beginning at the intersection with Sachem Street and continuing north for just over one and a half miles, through Science Park, to the intersection with Mill Rock Road. Winchester Avenue carries two 18-foot travel lanes, one in each direction, with bi-directional on-street parking. Sidewalks are maintained on the east and west sides of the roadway. Winchester Avenue is classified as an urban collector by the CTDOT, and the posted speed limit is 25 miles per hour. The land uses surrounding Winchester Avenue are primarily residential, planned development district, and general business.

Mansfield Street runs primarily north/south beginning at Sachem Street and continuing north for just under one mile to Highland Street. In the vicinity of the site, Mansfield Street carries an 11-foot

southbound travel lane, and a 19-foot northbound travel lane and sidewalks are provided on the west and east sides. South of Munson Street, the roadway is one-way northbound. Mansfield Street is classified by the CTDOT as an urban local roadway. The land uses surrounding Mansfield Street are primarily residential and planned development district.

Prospect Street runs primarily north/south beginning at College Street and Grove Street and continuing north for just under two miles to Mill Rock Road. Within the study area, Prospect Street carries two lanes, one in each direction, varying between 15 and 20 feet in width with on-street parking and sidewalks on both sides of the roadway. Prospect Street is classified by the CTDOT as an urban minor arterial and the posted speed limit is 25 miles per hour. The land uses surrounding Prospect Street are primarily residential and general business.

Munson Street runs primarily east/west along the southern limit of the site beginning at Mansfield Street and continuing west for approximately three quarters of a mile to Crescent Street and Winthrop Avenue. Along the site, Munson Street carries a 15-foot eastbound travel lane and a 20-foot westbound travel lane with sidewalks on both sides of the roadway. The westbound travel way includes an 8-foot parking lane and sharrow pavement markings. Munson Street after its intersection with Henry Street transitions to a 24-foot one-way westbound roadway including an 8 foot on-street parking lane on the south side. Munson Street is classified by the CTDOT as an urban local roadway. The land uses surrounding Munson Street are residential, general high density, and planned development district.

Henry Street runs primarily east/west from its intersection with Munson Street and Canal Street and continues west for approximately three fifths of a mile where it crosses Dixwell Avenue and ultimately terminates at its intersection with Sherman Avenue and Sherman Parkway. Henry Street carries two lanes of travel, one in each direction, varying in width from 15 to 20 feet with varying 8 foot on-street parking lanes. Sidewalks are provided on the north and south sides of Henry Street. Henry Street is classified by the CTDOT as an urban minor arterial and an urban minor collector. The land uses surrounding Henry Street are residential and general business.

Hillside Place runs east/west from Prospect Street and continues west for approximately 700 feet where it transitions into Munson Street at its intersection with Mansfield Street. Hillside Place carries two 14.5-foot travel lanes, one in each direction. Sidewalks are provided on the north and south sides of Hillside Place, and it is classified by the CTDOT as an urban minor arterial. The land use surrounding Hillside Place is residential.

Study Area Intersections

The following study area intersections were reviewed:

- Dixwell Avenue at Division Street and West Division Street
- Dixwell Avenue at Henry Street
- Winchester Avenue at Munson Street
- Winchester Avenue at 25 Science Park Garage
- Winchester Avenue at Argyle Street
- Winchester Avenue at Division Street
- Division Street at Mansfield Street
- Mansfield Street at Munson Street
- Hillside Place at Prospect Street

The four-way signalized intersection of Dixwell Avenue at Division Street and West Division Street provides approaches from the north and south on Dixwell Avenue, an approach from the west on West Division Street, and an approach from the east on Division Street. The approaches from the north and south provide a combined through/left turn lane and a combined through/right turn lane, respectively, and provide a dedicated bike lane and bi-directional on-street parking. West Division Street is one-way eastbound and is a single lane approach with on-street parking. Division Street provides a combined left/right turn lane approach and on-street parking on the south side of the roadway. Crosswalks are provided on all four legs of the intersection.

The four-way signalized intersection of Dixwell Avenue at Henry Street provides approaches from the north and south on Dixwell Avenue and approaches from the east and west on Henry Street. All four legs of the intersection are single lane approaches with crosswalks and on-street parking on both sides of the roadway.

The four-way signalized intersection of Winchester Avenue at Munson Street provides an approach from the north and south on Winchester Avenue and approaches from the east and west on Munson Street. Winchester Avenue southbound provides a combined through/left turn lane and a dedicated right turn lane, Winchester Avenue northbound is a single lane approach, Munson Street eastbound provides a combined through/right turn lane and a dedicated left turn lane, and Munson Street westbound is a single lane approach. Crosswalks are provided on all four legs of the intersection. On street parking is provided on both sides of Winchester Avenue south of the intersection, the west side of Winchester Avenue north of the intersection, and the north side of Munson Street east of the intersection.

Winchester Avenue at the 25 Science Park Garage is an unsignalized T-intersection with Winchester Avenue approaching from the north and south and the 25 Science Park Garage drive approaching from the west. Winchester Avenue southbound provides a combined through/right turn lane and northbound provides a through lane and a dedicated left turn lane. The stop-controlled garage drive provides a combined left/right turn lane.

The four-way unsignalized intersection of Winchester Avenue and Argyle Street provides approaches from the north and south on Winchester Avenue, an approach from the west on Argyle Street, and a private driveway approach from the east. Both Winchester Avenue approaches provide a combined through/right turn lane and a dedicated left turn lane. The Argyle Street approach and the private driveway are stop controlled and both provide a combined through/left turn lane and a dedicated right turn lane. The easterly driveway is proposed to be eliminated as part of the masterplan development.

The four-way signalized intersection of Winchester Avenue at Division Street provides approaches from the north and south on Winchester Avenue and approaches from the east and west on Division Street. Winchester Avenue southbound is a single lane approach and northbound provides a combined through/left turn lane and a dedicated right turn lane. Both approaches of Division Street provide a combined through/right turn lane and a dedicated left turn lane. Crosswalks are provided on all four approaches to the intersection. On street parking is provided on both sides of Winchester Avenue north of the intersection and on the north side of Division Street east of the intersection.

The four-way unsignalized intersection of Division Street at Mansfield Street provides stop-controlled approaches from the north and south on Mansfield Street and uncontrolled approaches from the east and west on Division Street. The approach from the west provides a combined through/right turn lane and a combined through/left turn lane. The other three approaches are single lane. Crosswalks are provided on all four legs of the intersection while on street parking is provided on the east side of Mansfield Street and the north side of Division Street in the vicinity of the intersection.

The four-way unsignalized intersection of Mansfield Street at Munson Street/Hillside Place provides approaches from the north and south on Mansfield Street, an approach from the west on Munson Street, and an approach from the east on Hillside Place. The northbound Mansfield Street approach is one-way toward the intersection, and all approaches are single lane. Crosswalks are provided on all four legs. On street parking is permitted on the east side of Mansfield Street north of the intersection, both sides of Mansfield Street south of the intersection, the south side of Hillside Place east of the intersection, and the north side of Munson Street west of the intersection.

The three-way signalized intersection of Prospect Street at Hillside Place provides approaches from the north and south on Prospect Street and an approach from west on Hillside Place. All approaches to the intersection are single lane. Crosswalks are provided on the west and south legs of the intersection and no on street parking is permitted in the vicinity of the intersection.

Site of Development

The site is comprised of 11.6 acres and fronts Division Street to the north, Mansfield Street to the east, Munson Street to the south, and Winchester Avenue to the west. The southwestern portion of the site consists of office and residential buildings. The southeastern portion of the site consists of an existing vacant building. The western and northwestern portion of the site is currently comprised of office buildings, parking lots, and driveways. The proposed development site is bordered by business/services to the west, and residential land uses to the north, east, and south.

Proposed Development

Winchester Residential Property, LLC proposes to construct a mixed-income development consisting of 1,156 apartment units, 27,000 square feet of retail space, and 457,233 square feet of office space and life science. The development will be constructed in two phases, with the first phase consisting of 456 apartment units, 12,000 square feet of supporting retail, and 289,233 square feet of office space. The site location is shown in the site location map, *Figure No. 1* of *Appendix A* and the master plan development program is summarized in *Appendix D*. The existing development currently provides 602± existing parking spaces and an additional 722± parking spaces will be provided for the proposed mixed-use development, which would therefore lead to a grand total of 1,324± parking spaces for the full master plan buildout. For the purposes of this analysis, the full master plan buildout was assumed to be completed by 2026.

Traffic Volumes and Counts

The greatest potential for traffic impact on the roadway network by the proposed development will occur during the weekday morning and afternoon peak hours, the periods when the commuter related trips are at their highest levels. Through consultation with the CTDOT Planning Division, Fuss & O'Neill, Inc. utilized the approved 2012 build condition traffic volumes from the Tract 'A' Science Park Master Plan Traffic Impact Study and grew them to the 2026 traffic volumes. This was done by utilizing a 0.6 percent per year peak hour growth factor to account for normal traffic growth in the study area. The background traffic volumes are depicted in *Figure No. 2* of *Appendix A*. When the Phase 1 development application moves forward, a full traffic impact study will be prepared, and new turning movement counts at the study intersections will be completed.

Other Developments:

Fuss & O'Neill contacted the CTDOT Bureau of Policy and Planning and the City of New Haven City Plan Department to identify any other pending or approved developments having site related traffic in the study area. Six developments were identified that were constructed or approved after 2012 and were, therefore, not captured in the approved 2012 build condition traffic volumes from the Tract 'A' Science Park Master Plan Traffic Impact Study. The expected site generated traffic volumes for each of the following developments were calculated using existing empirical data from the Institute of Transportation Engineers (ITE) publication Trip Generation, 10th edition, 2017:

- 316, 340 Dixwell Avenue, and 783 Orchard Street, is a proposed four story, 69-unit residential development with 32 parking spaces. Site access will be provided via one full access driveway on Dixwell Avenue, one enter-only drive on Orchard Street, and one exit-only drive on Dixwell Avenue. The site-generated traffic volumes are depicted in *Figure No. 3* of *Appendix A*.

- 291 Ashmun Street, 309 Ashmun Street, and 178-186 Canal Street, a proposed development of the city owned property located at the corner of Canal and Henry Streets, will include approximately 150 rental apartments, ground-floor neighborhood serving retail space, and associated parking. Site access will be provided via two full access drives, one on Ashmun Street and the other on Canal Street. The site-generated traffic volumes are depicted in *Figure No. 4* of *Appendix A*.

- The Dixwell Plaza redevelopment plan will go into construction with a 50,000 square foot new commercial building together with 150 residential units. The development is located on Dixwell Avenue just south of Charles Street. Site access will be provided via two full access drives, one on Webster Street and one on Charles Street. The site-generated traffic volumes are depicted in *Figure No. 5* of *Appendix A*.

- 201 Munson Street, a proposed mid-rise residential building will include 376 apartment units, 21 townhouses, and a total of 478 parking spaces. Site access will be provided via two driveways located on Munson Street. The east site driveway is full access and will be aligned with Ashmun Street, the west site driveway will provide a right turn only egress from the development onto Munson Street. Both site access driveways are proposed to be stop controlled. Expected site generated traffic volumes for this development were obtained from the "201 Munson Street Residential Development" prepared by "Fuss & O'Neill" in 2019 and are depicted in *Figure No. 6* of *Appendix A*. The development is planned to be constructed in 2022.

- 115 Munson is an existing building consisting of 147,155 square feet of general office space, which was constructed after 2012. The site-generated traffic volumes are depicted in *Figure No. 7* of *Appendix A*.

- Winchester Lofts is an existing 156 apartment unit, mid-rise residential building, which was constructed after 2012. The site-generated traffic volumes are depicted in *Figure No. 8* of *Appendix A*.

The above-described site-generated volumes were all combined with the 2026 grown volumes to determine the 2026 Background Traffic Conditions, as depicted in *Figure No. 9* of *Appendix A*.

Trip Distribution

The distribution of traffic entering and exiting the proposed site was applied to the study area intersections based on the existing regional traffic distributions and the layout of the surrounding roadway network. During the peak hours, the following arrival distributions of traffic are anticipated:

- 25% from the north on Dixwell Avenue
- 15% from the north on Prospect Street
- 10% from the west on Henry Street
- 10% from the South on Dixwell Avenue
- 25% from the south on Winchester Avenue
- 5% from the south on Mansfield Street
- 10% from the south on Prospect Street

A regional arrival/departure distribution for the new site generated traffic traveling to and from the project site is shown in *Figure No. 10* of *Appendix A*.

Trip Generation

The expected site generated traffic for the proposed 1,156 apartment units, 27,000 square feet of retail space, and 457,233 square feet of office space was calculated using existing empirical data from the Institute of Transportation Engineers (ITE) publication Trip Generation, 10th edition, 2017. This publication is an industry-accepted resource for determining trip generation. Trip generation for the morning and afternoon peak hours for some potential site uses were calculated using the ITE land use code 221 "Mid-Rise Multifamily Housing," land use code 710 "General Office Building," land use code 880 "Pharmacy/Drugstore without Drive-Through Window," land

use code 814 "Variety Store," land use code 932 "High-Turnover Sit-Down Restaurant," and land use code 899 "Liquor Store".

For the apartment units, 156 units have already been constructed and are, therefore, accounted for in the background traffic volumes. New vehicle trips were calculated for the proposed 1,000 additional units. The ITE manual indicates that 1,000 apartment units are expected to generate a total of 360 vehicle trips (94 entering, 266 exiting) during the morning peak hour, and a total of 440 vehicle trips (268 entering, 172 exiting) during the afternoon peak hour.

Site 5 in Tract A of the Master Plan Summary Sheet, provided in *Appendix D,* is an existing 147,155 square foot general office building. The 147,155 square feet of general office space is expected to generate a total of 171 vehicle trips (147 entering, 24 exiting) during the morning peak hour, and a total of 169 vehicle trips (27 entering, 142 exiting) during the afternoon peak hour. The 147,155 square feet of general office space is already 40% occupied; therefore, 40% of the expected generated trips were deducted from the total amount of vehicle trips leaving a total of 102 additional vehicle trips (88 entering, 14 exiting) during the morning peak hour and a total of 101 additional vehicle trips (16 entering, 85 exiting) during the afternoon peak hour.

Site 7 in Tract D of the Master Plan Summary Sheet, provided in *Appendix D*, is an existing parking space and will be converted to a 175,000 square foot general office building. The 175,000 square feet of general office space is expected to generate a total of 203 vehicle trips (175 entering, 28 exiting) during the morning peak hour, and a total of 201 vehicle trips (32 entering, 169 exiting) during the afternoon peak hour.

The 12,000 square feet of pharmacy/drugstore is expected to generate a total of 47 vehicle trips (31 entering, 16 exiting) during the morning peak hour, and a total of 102 vehicle trips (50 entering, 52 exiting) during the afternoon peak hour.

The 8,000 square feet of variety store is expected to generate a total of 25 vehicle trips (14 entering, 11 exiting) during the morning peak hour, and a total of 55 vehicle trips (28 entering, 27 exiting) during the afternoon peak hour.

Site 6A in Tract E of the Master Plan Summary Sheet, provided in *Appendix D,* is an existing 110,824 square foot general office building. The existing 110,824 square feet of general office space will be reduced to 105,824 square feet and will include the 5,000 square feet of high-turnover sit-down restaurant. The 105,824 square feet of general office space is expected to generate a total of 126 vehicle trips (108 entering, 18 exiting) during the morning peak hour, and a total of 122 vehicle trips (19 entering, 103 exiting) during the afternoon peak hour. The 5,000 square feet of high-turnover sit-down restaurant is expected to generate a total of 50 vehicle trips (27 entering, 23

exiting) during the morning peak hour, and a total of 49 vehicle trips (30 entering, 19 exiting) during the afternoon peak hour. The ITE manual estimates that the pre-existing development, consisting of 110,824 square feet of general office space, is generating a total of 131 vehicle trips (112 entering, 19 exiting) during the morning peak hour, and a total of 127 vehicle trips (20 entering, 107 exiting) during the afternoon peak hour. Therefore, the trips from the pre-existing development were deducted from the total amount of trips.

Site 6B in Tract E of the Master Plan Summary Sheet, provided in *Appendix D,* is an existing 31,254 general office building. The existing 31,254 square feet of general office space will be reduced to 29,254 square feet of general office space and will include the 2,000 square foot liquor store. The 29,254 square feet of general office space is expected to generate a total of 54 vehicle trips (46 entering, 8 exiting) during the morning peak hour, and a total of 35 vehicle trips (5 entering, 30 exiting) during the afternoon peak hour. The 2,000 square foot liquor store is expected to generate a total of 10 vehicle trips (5 entering, 5 exiting) during the morning peak hour, and a total of 33 vehicle trips (16 entering, 17 exiting) during the afternoon peak hour. The ITE manual estimates that the pre-existing development, consisting of 31,254 square feet of general office space, previously generated a total of 56 vehicle trips (48 entering, 8 exiting) during the morning peak hour, and a total of 38 vehicle trips (6 entering, 32 exiting) during the afternoon peak hour. Therefore, the trips from the pre-existing development were deducted from the total amount of trips.

The proposed development is surrounded by a multitude of bus stops, therefore reducing the vehicular trip demand at this site. As such, a transit-oriented development (TOD) credit has been applied to the trip generation for the development. Based on input from the CTDOT Bureau of Policy and Planning, a rate of 10 percent was used for the TOD credit.

Based on the above, the proposed development is expected to generate a combined total of 711 new vehicle trips (385 entering, 326 exiting) during the morning peak hour, and a total of 876 vehicle trips (394 entering, 482 exiting) during the afternoon peak hour. A summary of peak hour trip generation for the proposed master plan development is provided in *Table 1* below and the site generated traffic volumes traveling to and from the project site are also illustrated in *Figure No. 11* of *Appendix A.*

Table 1
Morning Peak Hour Site Generated Traffic Volumes
Science Park Master Plan
New Haven, Connecticut

Land Use	Trip Generation		
	Trips Entering	Trips Exiting	Total Trips
1,000 Apartment Units	94	266	360
147,155 SF Office	147	24	171
Existing 147,155 SF Office (40% Occupied)	-59	-10	-69
175,000 SF Office	175	28	203
12,000 SF Pharmacy	31	16	47
8,000 SF Variety Store	14	11	25
5,000 SF Restaurant	27	23	50
105,824 SF Office	108	18	126
Existing 110,824 SF Office	-112	-19	-131
2,000 SF Liquor Store	5	5	10
29,254 SF Office	46	8	54
Existing 31,254 SF Office	-48	-8	-56
AM Peak Hour Subtotal	428	362	790
Transit Credit (-10%)	-43	-36	-79
AM Peak Hour Total	**385**	**326**	**711**

Note: Trip generation based on Rate per Land use Code 221 (Mid-Rise Multifamily Housing), Land use Code 710 (General Office Building), Land use Code 880 (Pharmacy/Drugstore without Drive-Through Window), Land use Code 814 (Variety Store), Land use Code 932 (High-Turnover Sit-Down Restaurant), Land use Code 899 (Liquor Store) as published in *Trip Generation,* 10th Edition, 2017. Volumes reflect 10 percent reduction due to transit credit.

Table 1 (cont.d)
Afternoon Peak Hour Site Generated Traffic Volumes
Science Park Master Plan
New Haven, Connecticut

Land Use	Trip Generation		
	Total Trips	Trips Entering	Trips Exiting
1,000 Apartment Units	268	172	440
147,155 SF Office	27	142	169
Existing 147,155 SF Office (40% Occupied)	-11	-57	-68
175,000 SF Office	32	169	201
12,000 SF Pharmacy	50	52	102
8,000 SF Variety Store	28	27	55
5,000 SF Restaurant	30	19	49
105,824 SF Office	19	103	122
Existing 110,824 SF Office	-20	-107	-127
2,000 SF Liquor Store	16	17	33
29,254 SF Office	5	30	35
Existing 31,254 SF Office	-6	-32	-38
PM Peak Hour Subtotal	438	535	973
Transit Credit (-10%)	-44	-53	-97
PM Peak Hour Total	**394**	**482**	**876**

Note: Trip generation based on Rate per Land use Code 221 (Mid-Rise Multifamily Housing), Land use Code 710 (General Office Building), Land use Code 880 (Pharmacy/Drugstore without Drive-Through Window), Land use Code 814 (Variety Store), Land use Code 932 (High-Turnover Sit-Down Restaurant), Land use Code 899 (Liquor Store) as published in *Trip Generation,* 10th Edition, 2017. Volumes reflect 10 percent reduction due to transit credit.

Combined Condition Traffic Volumes

The site generated traffic volumes, shown in *Figure 11* of *Appendix A,* were added to the 2026 Background Condition traffic volumes in *Figure 9* of *Appendix A* to yield the 2026 Combined Condition traffic volumes depicted in *Figure 12* of *Appendix A*.

Intersection Capacity Analysis

Capacity analyses for the signalized and unsignalized intersections in the study area were conducted using Synchro Professional Software, version 10.0.

In discussing intersection capacity analyses results, two terms are used to describe the operating condition of the road or intersection. These two terms are volume to capacity ratio (v/c) and level of service (LOS).

LOS is a measure of the delay experienced by stopped vehicles at an intersection. LOS is rated on a scale from A to F, with A describing a condition of very low delay (less than 10 seconds per vehicle), and F describing a condition where delays will exceed 50 seconds per vehicle for unsignalized intersections and 80 seconds per vehicle for signalized intersections. Delay is described as a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Therefore, intersections with longer delay times are less acceptable to most drivers.

LOS is generally used to describe the operation (based on delay time) of both signalized and unsignalized intersections, while v/c ratio is applied to signalized intersections only. These definitions for v/c ratio and LOS, as well as the methodology for conducting signalized and unsignalized intersection capacity analyses, are taken from the "2000 Highway Capacity Manual" published by the Transportation Research Board.

In discussing two-way stop controlled unsignalized intersection capacity analyses, LOS is used to provide a description of the delay and operational characteristics of the turns from the minor street (stop sign controlled) to the major street and turns from the major street to the minor street. Through vehicles on the major street do not experience delay, therefore they are not rated with a level of service.

Using the above referenced methodologies, morning and afternoon peak hour capacity analyses were conducted at the following signalized intersections:

- Dixwell Avenue at Division Street and West Division Street
- Dixwell Avenue at Henry Street

- Winchester Avenue at Munson Street
- Division Street at Winchester Avenue
- Hillside Place at Prospect Street

Morning and afternoon peak hour capacity analyses were also conducted at the following unsignalized intersections:

- 25 Science Park Garage at Winchester Avenue
- Argyle Street at Winchester Avenue
- Division Street at Mansfield Street
- Mansfield Street at Munson Street and Hillside Place

Tables No. 3 and 4 present a summary of the levels of service at the unsignalized and signalized intersections for both the background and combined conditions traffic volumes. Copies of the analysis worksheets can be found in *Appendices B and C* for the morning and afternoon peak hours, respectively. The determination of the traffic impacts from the proposed master plan development is made through a comparison of the background conditions LOS (without the proposed development) versus the combined conditions LOS (with the proposed development).

The capacity analysis at Dixwell Avenue, Division Street, and West Division Street revealed that the signalized intersection will operate acceptably at LOS C in the background condition and LOS D in the combined condition during the morning peak hour and will operate at LOS C in the background condition and LOS F in the combined condition during the afternoon peak hour. Upon optimization of signal timings and replacing the exclusive pedestrian phase with concurrent pedestrian phasing, the LOS during the morning peak hour can return to LOS C operation and improve during the afternoon peak hour to a LOS E. Additionally, the intersection operation can be further improved by adding a dedicated left turn lane in the southbound direction, which would increase the LOS of the afternoon peak hour to an efficient LOS B. This left turn lane can be accommodated through a restriping of the roadway and the removal of on street parking in the vicinity of the intersection. If the parking lane is maintained, some road widening would be required.

The capacity analysis at Dixwell Avenue and Henry Street revealed that during the morning peak hour, the signalized intersection will operate at acceptably at LOS C under background conditions and LOS D, under combined conditions. The intersection will operate at LOS F during the afternoon peak hour under both background and combined conditions. While the failing operations are a pre-existing condition, it is noted that this intersection can be greatly improved by adding a dedicated left turn lane to both the eastbound and westbound Henry Street approaches, which would increase operations to LOS D during the afternoon peak hour. Road width is sufficient in the vicinity of the intersection to restripe a portion of the on street parking lanes to

provide left turn bays. Should the on street parking be maintained, some road widening would be required.

The capacity analysis at Winchester Avenue and Munson Street revealed that during the morning peak hour, the signalized intersection will operate at LOS C under background conditions and LOS E under combined conditions. The intersection will operate at LOS F during the afternoon peak hour under both the background and combined conditions. Upon optimization of signal timings and converting the exclusive pedestrian phase to concurrent phasing, the combined condition in the morning peak hour can return to LOS C and improve from LOS F to LOS D during the afternoon peak hour.

The capacity analysis at Division Street and Winchester Avenue revealed that the signalized intersection will operate acceptably at LOS C or LOS B during the morning peak hour, under the background and combined conditions. The intersection will continue to operate efficiently at LOS B during the afternoon peak hour, under the background and combined conditions.

The capacity analysis at Hillside Place and Prospect Street revealed that the signalized intersection will operate efficiently at LOS B during the morning peak hour under the background and combined conditions. During the afternoon peak hour, the intersection will operate at LOS D under background conditions and LOS E under combined conditions. Upon optimization of signal timings and the addition of a dedicated left turn lane to the northbound approach, the combined condition during the afternoon peak hour can improve to LOS C. Provision of a northbound left turn lane at this intersection can be accomplished through a simple restriping of the roadway.

The capacity analysis at 25 Science Park Garage and Winchester Avenue revealed that the stop-controlled exit from the garage will operate efficiently at LOS B and the northbound left-turn into the garage will operate at LOS A during the morning peak hour under the background and combined conditions. The garage exit and northbound left-turn approaches will operate at LOS C and LOS A in the background conditions and will drop slightly to LOS D and LOS B in the combined conditions during the afternoon peak hour.

Under full build conditions, the development driveway on the east leg of the intersection of Argyle Street and Winchester Avenue will be closed. The capacity analysis revealed that the unsignalized intersection will operate at a greater efficiency after the removal of the east leg. The Argyle Street eastbound though/left movement will operate at LOS E in the background condition and improve to LOS D in the combined condition during the morning peak hour and will operate at LOS F in the background condition and improve to LOS D in the combined condition during the afternoon peak hour.

The capacity analysis at Division Street and Mansfield Street revealed that the unsignalized intersection southbound approach will operate efficiently at LOS B under both background and combined conditions during the morning peak hour. The northbound approach will operate at LOS B in the background condition and drop slightly to LOS C in the combined condition during the afternoon peak hour. The Division Street left turns will operate efficiently at LOS A.

The capacity analysis at Munson Street, Mansfield Street, and Hillside Place revealed that the unsignalized intersection eastbound approach will operate efficiently at LOS A under all conditions and the northbound approach will operate acceptably at LOS C under all conditions. The southbound approach will operate acceptably at LOS C during both conditions in the morning peak hour. In the afternoon peak hour, the approach will operate at LOS E in the background condition and drop slightly to LOS F under the combined conditions. This delay is confined to the afternoon peak hour and only the southbound approach. Therefore, no off-site improvements are proposed at this intersection.

Table 3
Unsignalized Intersection Level Of Service Summary
Science Park Master Plan
New Haven, Connecticut

Two-Way Stop Controlled Intersections (Critical Movements)	2026 Weekday Morning Peak Hour		2026 Weekday Afternoon Peak Hour	
	Background	Combined	Background	Combined
25 Science Park Garage at Winchester Avenue				
EB Approach	LOS B*	LOS B	LOS C	LOS D
NB Left	LOS A	LOS A	LOS A	LOS B
Argyle Street at Winchester Avenue				
Eastbound Through/Left	LOS E	LOS D	LOS F	LOS D
EB Right	LOS A	LOS B	LOS B	LOS B
WB Through/Left	LOS F	N/A	LOS F	N/A
WB Right	LOS B	N/A	LOS B	N/A
NB Left	LOS A	LOS A	LOS A	LOS A
SB Left	LOS A	N/A	LOS A	N/A

Two-Way Stop Controlled Intersections (Critical Movements)	2026 Weekday Morning Peak Hour		2026 Weekday Afternoon Peak Hour	
	Background	Combined	Background	Combined
Mansfield Street at Munson Street and Hillside Place				
Eastbound Through/Left	LOS A	LOS A	LOS A	LOS A
NB Approach	LOS C	LOS C	LOS C	LOS C
SB Approach	LOS C	LOS C	LOS E	LOS F
Mansfield Street at Division Street				
EB Through/Left	LOS A	LOS A	LOS A	LOS A
WB Approach	LOS A	LOS A	LOS A	LOS A
NB Approach	LOS B	LOS B	LOS B	LOS C
SB Approach	LOS B	LOS B	LOS B	LOS B

*Values indicated are critical movement Level of Service (LOS)

Table 4

Signalized Intersection Level of Service Summary
Science Park Master Plan
New Haven, Connecticut

Signalized Intersections	2026 Weekday Morning Peak Hour				2026 Weekday Afternoon Peak Hour			
	Background	Combined	Improved**	Improved***	Background	Combined	Improved**	Improved***
Dixwell Avenue at Division Street and West Division Street	0.80/LOS C*	0.96/LOS D	0.90/LOS C	0.53/LOS C	0.79/LOS C	1.37/LOS F	1.12/ LOS E	0.68/ LOS B
EB Approach	LOS D	LOS D	LOS D	LOS D	LOS C	LOS C	LOS C	LOS C
WB Approach	LOS C	LOS C	LOS C	LOS C	LOS D	LOS D	LOS D	LOS D
NB Approach	LOS A	LOS A	LOS A	LOS A	LOS B	LOS B	LOS B	LOS B
SB Approach	LOS C	LOS E	LOS C	LOS A	LOS C	LOS F	LOS F	LOS A
Dixwell Avenue at Henry Street	0.82/LOS C	0.85/LOS D	0.81/LOS C	0.78/ LOS C	1.14/LOS F	1.32/LOS F	1.22/LOS F	1.00/ LOS D
EB Approach	LOS C	LOS C	LOS C	LOS D	LOS C	LOS D	LOS E	LOS C
WB Approach	LOS C	LOS C	LOS C	LOS D	LOS C	LOS F	LOS F	LOS D
NB Approach	LOS B	LOS C	LOS B	LOS B	LOS F	LOS F	LOS D	LOS C
SB Approach	LOS C	LOS E	LOS C	LOS B	LOS F	LOS F	LOS F	LOS E

Table 4 (Cont.)

Signalized Intersection Level of Service Summary
Science Park Master Plan
New Haven, Connecticut

Signalized Intersections	2026 Weekday Morning Peak Hour	2026 Weekday Afternoon Peak Hour	Signalized Intersections	2026 Weekday Morning Peak Hour	2026 Weekday Afternoon Peak Hour	Signalized Intersections	2026 Weekday Morning Peak Hour	2026 Weekday Afternoon Peak Hour
	Background	**Combined**		**Background**	**Combined**		**Background**	**Combined**
Winchester Avenue at Munson Street	0.74/LOS C*	0.96/LOS E	0.83/LOS C	N/A	1.07/LOS F	1.88/LOS F	0.94/LOS D	N/A
EB Approach	LOS A	LOS A	LOS C	N/A	LOS A	LOS A	LOS D	N/A
WB Approach	LOS C	LOS F	LOS D	N/A	LOS D	LOS F	LOS D	N/A
NB Approach	LOS F	LOS F	LOS C	N/A	LOS F	LOS F	LOS D	N/A
SB Approach	LOS C	LOS C	LOS B	N/A	LOS E	LOS F	LOS C	N/A

*Values indicated are intersection v/c Ratio/LOS

Table 4 (Cont.)
Signalized Intersection Level of Service Summary
Science Park Master Plan
New Haven, Connecticut

Signalized Intersections	2026 Weekday Morning Peak Hour				2026 Weekday Afternoon Peak Hour			
	Background	Combined	Improved**	Improved***	Background	Combined	Improved**	Improved***
Division Street at Winchester Avenue	0.38/LOS C	0.51/LOS B	N/A	N/A	0.45/LOS B	0.64/LOS B	N/A	N/A
EB Approach	LOS C	LOS B	N/A	N/A	LOS C	LOS C	N/A	N/A
WB Approach	LOS D	LOS C	N/A	N/A	LOS C	LOS B	N/A	N/A
NB Approach	LOS A	LOS A	N/A	N/A	LOS A	LOS B	N/A	N/A
SB Approach	LOS A	LOS A	N/A	N/A	LOS A	LOS A	N/A	N/A
Hillside Place at Prospect Street	0.51/LOS B	0.59/LOS B	0.60/ LOS B	0.56/LOS B	0.98/LOS D	1.08/LOS E	1.11/LOS E	0.98/LOS C
EB Approach	LOS C	LOS C	LOS C	LOS C	LOS C	LOS D	LOS D	LOS D
NB Approach	LOS B	LOS B	LOS B	LOS B	LOS E	LOS F	LOS F	LOS C
SB Approach	LOS C	LOS C	LOS B	LOS C	LOS C	LOS C	LOS C	LOS C

*Values indicated are intersection v/c Ratio/LOS
**Changed exclusive pedestrian phase to concurrent and optimized signal timings
*** Added dedicated turn lanes

Queue Analysis

Background and Combined Condition 95th percentile (design) queue lengths were reviewed at each intersection in the study area. The 95th percentile (design) vehicle queue lengths represent the maximum queue lengths that can be expected at each of the critical approach lanes of the study area intersections. The queue lengths are provided in the Synchro capacity worksheets, in the appendix. *Tables 5 and 6* below provide a summary of the queue lengths for the critical lanes at each intersection.

The results of the queue analysis indicate that the proposed development will have minimal increases in queue lengths (two vehicle lengths or less) on the majority of the intersection approach lanes during both the morning and afternoon peak hours. Exceptions include the Winchester Avenue at Munson Street eastbound left turn lane and eastbound through/right turn lane during the morning and afternoon peak hours, the Winchester Avenue at Munson Street southbound right turn lane during the afternoon peak hour, the Winchester Avenue at Division Street northbound through/left turn lane during the afternoon peak hour, the Munson Street at Mansfield Street southbound approach during the afternoon peak hour, and Hillside Place at Prospect Street northbound approach lane during the afternoon peak hour.

The analysis at the intersection of Winchester Avenue and Munson Street revealed that the eastbound left turn and through/right turn lanes will experience queue length increases of up to eight and four vehicles, respectively, during the morning peak hour and queue length increases of up to five vehicles in each lane during the afternoon peak hour. The analysis also revealed that the southbound approach will experience a queue length increase of up to ten vehicles during the afternoon peak hour. The increase to the southbound through/left turn approach queue will be mitigated through signal timing optimizations and conversion of the pedestrian signal phasing to concurrent, but the timing changes will also increase the right-turn queues. Sufficient storage exists on both the eastbound through/right lane and the southbound through/left lane to accommodate the queue increases in the entire eastbound and southbound approaches.

The analysis at the intersection of Winchester Avenue and Division Street revealed that the northbound through/left turn lane will experience a queue length increase of up to five vehicles during the afternoon peak hour. It should be noted that the existing traffic queues exceed the provided storage lengths. However, with the removal of the parking lot and driveway directly southeast of the intersection, it is possible to extend the northbound through/left turn lane to accommodate the increase in queue lengths in the combined condition.

The analysis at the intersection of Munson Street/Hillside Place and Mansfield Street revealed that the southbound approach will experience a queue length increase of up to seven vehicles during the afternoon peak hour. Sufficient storage length exists to accommodate the queue increase.

The analysis at the intersection of Hillside Place and Prospect Street revealed that the northbound approach will experience a queue length increase of up to six vehicles during the afternoon peak hour exceeding the currently available storage length. Upon optimization of signal timings, adding a northbound left turn lane via restriping, and continuing the second northbound lane for an additional 150 feet south of Edwards Street, the queue lengths at the intersection of Hillside Place and Prospect Street will be mitigated.

The analysis also revealed other individual intersection approach lanes within the study area that currently exceed their available queue storage under the existing condition peak hours. These include the eastbound combined left/through/right turn lane at Dixwell Avenue and Henry Street and the northbound combined through/left turn lane at Hillside Place and Prospect Street. However, the proposed signal and roadway modifications described throughout this report can greatly reduce the queues under combined conditions.

Table 5
Weekday Morning Peak Hour Queue Length Summary
Science Park Master Plan
New Haven, Connecticut

Intersection	Approach Lane	2026 Background Queue	2026 Combined Queue	Improved*	Improved**	Available Storage
Dixwell Avenue at Division Street and West Division Street	EB Approach	120 Feet	120 Feet	120 Feet	120 Feet	410 Feet
	WB Approach	90 Feet	105 Feet	100 Feet	100 Feet	430 Feet
	NB Approach	175 Feet	185 Feet	105 Feet	105 Feet	>1,000 Feet
	SB Left	N/A	N/A	N/A	120 Feet	N/A
	SB Through	750 Feet	910 Feet	750 Feet	245 Feet	>1,000 Feet
Dixwell Avenue at Henry Street	EB Left	N/A	N/A	N/A	35 Feet	N/A
	EB Through/Right	395 Feet	445 Feet	325 Feet	380 Feet	375 Feet
	WB Left	N/A	N/A	N/A	110 Feet	N/A
	WB Through/Right	180 Feet	215 Feet	190 Feet	140 Feet	985 Feet
	NB Approach	170 Feet	200 Feet	185 Feet	150 Feet	810 Feet
	SB Approach	570 Feet	570 Feet	535 Feet	395 Feet	595 Feet
Winchester Avenue at Munson Street	EB Left	40 Feet	130 Feet	235 Feet	N/A	100 Feet
	EB Through/Right	40 Feet	60 Feet	135 Feet	N/A	350 Feet
	WB Approach	255 Feet	390 Feet	260 Feet	N/A	735 Feet
	NB Approach	305 Feet	405 Feet	325 Feet	N/A	>1,000 Feet
	SB Through/Left	125 Feet	210 Feet	150 Feet	N/A	120 Feet
	SB Right	25 Feet	20 Feet	30 Feet	N/A	245 Feet

Table 5 (Cont.)
Weekday Morning Peak Hour Queue Length Summary
Science Park Master Plan
New Haven, Connecticut

Intersection	Approach Lane	2026 Background Queue	2026 Combined Queue	Improved*	Improved**	Available Storage
25 Science Park at Winchester Avenue	EB Approach	5 Feet	5 Feet	N/A	N/A	N/A Feet
	NB Left	5 Feet	5 Feet	N/A	N/A	50 Feet
Argyle Street at Winchester Avenue and Private Drive	EB Through/Left	10 Feet	5 Feet	N/A	N/A	570 Feet
	EB Right	5 Feet	5 Feet	N/A	N/A	325 Feet
	WB Through/Left	90 Feet	N/A	N/A	N/A	250 Feet
	WB Right	5 Feet	N/A	N/A	N/A	70 Feet
	NB Left	15 Feet	20 Feet	N/A	N/A	95 Feet
	SB Left	10 Feet	N/A	N/A	N/A	175 Feet
Winchester Avenue at Division Street	EB Left	15 Feet	15 Feet	N/A	N/A	55 Feet
	EB Through/Right	115 Feet	155 Feet	N/A	N/A	470 Feet
	WB Left	150 Feet	175 Feet	N/A	N/A	480 Feet
	WB Through/Right	65 Feet	65 Feet	N/A	N/A	750 Feet
	NB Through/Left	50 Feet	90 Feet	N/A	N/A	80 Feet
	NB Right	35 Feet	35 Feet	N/A	N/A	>1,000 Feet
	SB Approach	50 Feet	55 Feet	N/A	N/A	280 Feet
Munson Street at Mansfield Street	EB Approach	5 Feet	5 Feet	N/A	N/A	740 Feet
	NB Approach	20 Feet	30 Feet	N/A	N/A	405 Feet
	SB Approach	10 Feet	35 Feet	N/A	N/A	>1,000 Feet

Table 5 (Cont.)
Weekday Morning Peak Hour Queue Length Summary
Science Park Master Plan
New Haven, Connecticut

Intersection	Approach Lane	2026 Background Queue	2026 Combined Queue	Improved*	Improved**	Available Storage
Division Street at Mansfield Street	EB Through/Left	0 Feet	0 Feet	N/A	N/A	185 Feet
	WB Through/Left/Right	5 Feet	5 Feet	N/A	N/A	360 Feet
	NB Approach	5 Feet	10 Feet	N/A	N/A	>1,000 Feet
	SB Approach	5 Feet	5 Feet	N/A	N/A	560 Feet
Hillside Place at Prospect Street	EB Approach	175 Feet	200 Feet	200 Feet	200 Feet	650 Feet
	NB Left	N/A	N/A	N/A	130 Feet	N/A
	NB Through	120 Feet	150 Feet	150 Feet	25 Feet	100 Feet
	SB Approach	110 Feet	110 Feet	100 Feet	130 Feet	>1,000 Feet

NOTE: Values indicated represent 95th percentile (design) vehicle queue lengths. Values are rounded to the nearest 5 feet.
*Results with signal timing optimizations
**Results with roadway modifications

Table 6
Weekday Afternoon Peak Hour Queue Length Summary
Science Park Master Plan
New Haven, Connecticut

Intersection	Approach Lane	2026 Background Queue	2026 Combined Queue	Improved*	Improved**	Available Storage
Dixwell Avenue at Division Street and West Division Street	EB Approach	95 Feet	100 Feet	90 Feet	90 Feet	410 Feet
	WB Approach	190 Feet	265 Feet	240 Feet	240 Feet	430 Feet
	NB Approach	555 Feet	555 Feet	350 Feet	350 Feet	>1,000 Feet
	SB Left	N/A	N/A	N/A	135 Feet	N/A
	SB Through	630 Feet	700 Feet	745 Feet	260 Feet	>1,000 Feet
Dixwell Avenue at Henry Street	EB Left	N/A	N/A	N/A	135 Feet	N/A
	EB Through/Right	585 Feet	645 Feet	580 Feet	405 Feet	375 Feet
	WB Left	N/A	N/A	N/A	100 Feet	N/A
	WB Through/Right	540 Feet	610 Feet	720 Feet	540 Feet	985 Feet
	NB Approach	485 Feet	525 Feet	460 Feet	405 Feet	810 Feet
	SB Approach	705 Feet	715 Feet	640 Feet	585 Feet	595 Feet
Winchester Avenue at Munson Street	EB Left	20 Feet	40 Feet	125 Feet	N/A	100 Feet
	EB Through/Right	45 Feet	55 Feet	170 Feet	N/A	350 Feet
	WB Approach	470 Feet	545 Feet	405 Feet	N/A	735 Feet
	NB Approach	405 Feet	535 Feet	390 Feet	N/A	>1,000 Feet
	SB Through/Left	340 Feet	490 Feet	350 Feet	N/A	120 Feet
	SB Right	35 Feet	25 Feet	290 Feet	N/A	245 Feet

Table 6 (Cont.)
Weekday Afternoon Peak Hour Queue Length Summary
Science Park Master Plan
New Haven, Connecticut

Intersection	Approach Lane	2026 Background Queue	2026 Combined Queue	Improved*	Improved**	Available Storage
25 Science Park at Winchester Avenue	EB Approach	15 Feet	25 Feet	N/A	N/A	N/A
	NB Left	0 Feet	5 Feet	N/A	N/A	50 Feet
Argyle Street at Winchester Avenue and Private Drive	EB Through/Left	125 Feet	60 Feet	N/A	N/A	570 Feet
	EB Right	45 Feet	50 Feet	N/A	N/A	325 Feet
	WB Through/Left	410 Feet	N/A	N/A	N/A	250 Feet
	WB Right	15 Feet	N/A	N/A	N/A	70 Feet
	NB Left	5 Feet	5 Feet	N/A	N/A	95 Feet
	SB Left	5 Feet	0 Feet	N/A	N/A	175 Feet
Winchester Avenue at Division Street	EB Left	40 Feet	35 Feet	N/A	N/A	55 Feet
	EB Through/Right	180 Feet	210 Feet	N/A	N/A	470 Feet
	WB Left	95 Feet	75 Feet	N/A	N/A	480 Feet
	WB Through/Right	70 Feet	70 Feet	N/A	N/A	750 Feet
	NB Through/Left	115 Feet	230 Feet	N/A	N/A	80 Feet
	NB Right	100 Feet	135 Feet	N/A	N/A	>1,000 Feet
	SB Approach	45 Feet	60 Feet	N/A	N/A	280 Feet

Table 6 (Cont.)
Weekday Afternoon Peak Hour Queue Length Summary
Science Park Master Plan
New Haven, Connecticut

Intersection	Approach Lane	2026 Background Queue	2026 Combined Queue	Improved*	Improved**	Available Storage
Division Street at Mansfield Street	EB Through/Left			N/A	N/A	
	WB	0 Feet	0 Feet	N/A	N/A	185 Feet
	Through/Left/Right	5 Feet	5 Feet	N/A	N/A	360 Feet
	NB Approach	20 Feet	35 Feet	N/A	N/A	>1,000 Feet
	SB Approach	5 Feet	5 Feet			560 Feet
Hillside Place at Prospect Street	EB Approach	390 Feet	480 Feet	480 Feet	480 Feet	650 Feet
	NB Left	N/A	N/A	N/A	245 Feet	N/A
	NB Through	410 Feet	470 Feet	425 Feet	95 Feet	100 Feet
	SB Approach	200 Feet	200 Feet	185 Feet	185 Feet	>1,000 Feet

NOTE: Values indicated represent 95th percentile (design) vehicle queue lengths. Values are rounded to the nearest 5 feet.
*Results with signal timing optimizations
**Results with roadway modifications

Conclusion

The purpose of preparing this Traffic Impact Statement was to identify the impact of the expected traffic generated by the proposed mixed-use development master plan consisting of 1,156 residential units, 27,000 square feet of supporting retail, and 457,233 square feet of office space on the adjacent roadway network. The study revealed that the proposed mixed-use development will generate a total of 711 new vehicle trips (385 entering, 326 exiting) during the morning peak hour, and a total of 876 new vehicle trips (394 entering, 482 exiting) during the afternoon peak hour.

In order to accommodate the anticipated development traffic, new roadways (Sheffield Avenue Extension and Mason Street) will be constructed and will run north to south and east to west, respectively, through the site. These roadways will provide a significant improvement to street connectivity to Winchester Avenue, Mansfield Street, and Division Street in comparison to the previously approved PDD 49 on this site. In addition to improved vehicular access, excellent transit service is available to and from Science Park via CTtransit Route 234 and the Yale Shuttle service red loop. The existing road network in the area also provides a combination of bike lanes and sharrows that connect the site to the Farmington Canal Greenway and the City's existing bike lanes on Prospect Street and Orange Street.

The capacity analysis revealed that the majority of the intersections in the study area will continue to operate acceptably after inclusion of the site generated traffic. Some of the study area intersection approaches will experience more significant delay increases during the peak hours as a result of the proposed development traffic. However, with the optimization of signal timings, along with restriping and potential roadway widening, the intersections will operate within acceptable levels of service or continue to operate at existing levels of service.

The addition of vehicular trips generated by the proposed development will also result in minimal queue increases of two vehicle lengths or less at most intersection approaches during the peak hours. However, some of the intersections will experience more substantial queue increases of three to ten vehicle lengths including: the Winchester Avenue at Munson Street eastbound left turn lane, eastbound through/right turn lane and southbound right turn lane; the Winchester Avenue at Division Street northbound through/left turn lane; the Munson Street at Mansfield Street southbound approach; and the Hillside Place at Prospect Street northbound approach. Sufficient storage length exists on all intersection approaches to accommodate the queue increases, except for the eastbound through/right turn lane at Dixwell Avenue and Henry Street, the eastbound through/right, southbound through/left, and southbound right turn lanes at Winchester Avenue and Munson Street, and the northbound through/right turn lane at Winchester Avenue and Division Street.

Based on the results of the capacity and queue analysis, the following off-site signal timing revisions and roadway improvements are recommended:

- At the signalized intersection of Dixwell Avenue, Division Street, and West Division Street, add a dedicated left turn lane southbound, optimize signal timings, and replace the exclusive pedestrian phase with concurrent pedestrian phasing. The southbound left turn lane can be accommodated by restriping the roadway and removing a portion of the on street parking. If the parking lanes are maintained, some road widening would be necessary.

- At the signalized intersection of Dixwell Avenue and Henry Street, add a dedicated left turn lane to both the eastbound and westbound approaches, optimize signal timings and replace the exclusive pedestrian phase with concurrent pedestrian phasing. The Henry Street left turn lanes can be accommodated by restriping the roadway and removing a portion of the on street parking lanes. If the parking lanes are maintained, some road widening would be necessary.

- At the signalized intersection of Winchester Avenue and Munson Street, optimize signal timings and replace the exclusive pedestrian phase with concurrent pedestrian phasing.

- At the intersection of Winchester Avenue and Division Street, extend the northbound through/left turn lane by restriping the roadway.

- On Winchester Avenue, all pavement markings are to be restriped along this roadway. Add a left turn pocket to allow drivers going southbound to turn left into the proposed parking lot between Tract E, Site 6-A and Site 3-A. The northbound left turn pocket on Winchester Avenue leading into Argyle Street will need to be reduced to add a short southbound left turn pocket for drivers intending to turn left onto the proposed Mason Street. The raised median at this location will also need to be truncated in order to allow drivers to make the westbound left turn out of Mason Street onto Winchester Avenue southbound.

- At the intersection of Sheffield Avenue and Division Street, add a double left turn arrow in the left Division Street westbound approach lane to Sheffield Avenue to allow drivers to either turn left into the proposed extended Sheffield Avenue or go through the intersection and make the westbound left turn onto Winchester Avenue.

- Restripe to add a dedicated northbound left turn lane on Prospect Street at the intersection with Hillside Place and continue the second northbound lane for an additional 150 feet

south of Edwards Street by restriping a portion of the parking lane on the east side of Prospect Street. In addition, optimize the signal timings at both adjacent intersections.

Based on the results of the foregoing analysis, it is the professional opinion of Fuss & O'Neill, Inc. that the proposed Science Park Master Plan development will not significantly impact traffic operations on the nearby City roadway network upon inclusion of the recommended off-site roadway and traffic signal improvements described herein.

Should you have any questions on this traffic review, please contact me at 860-646-2469, ext. 5381.

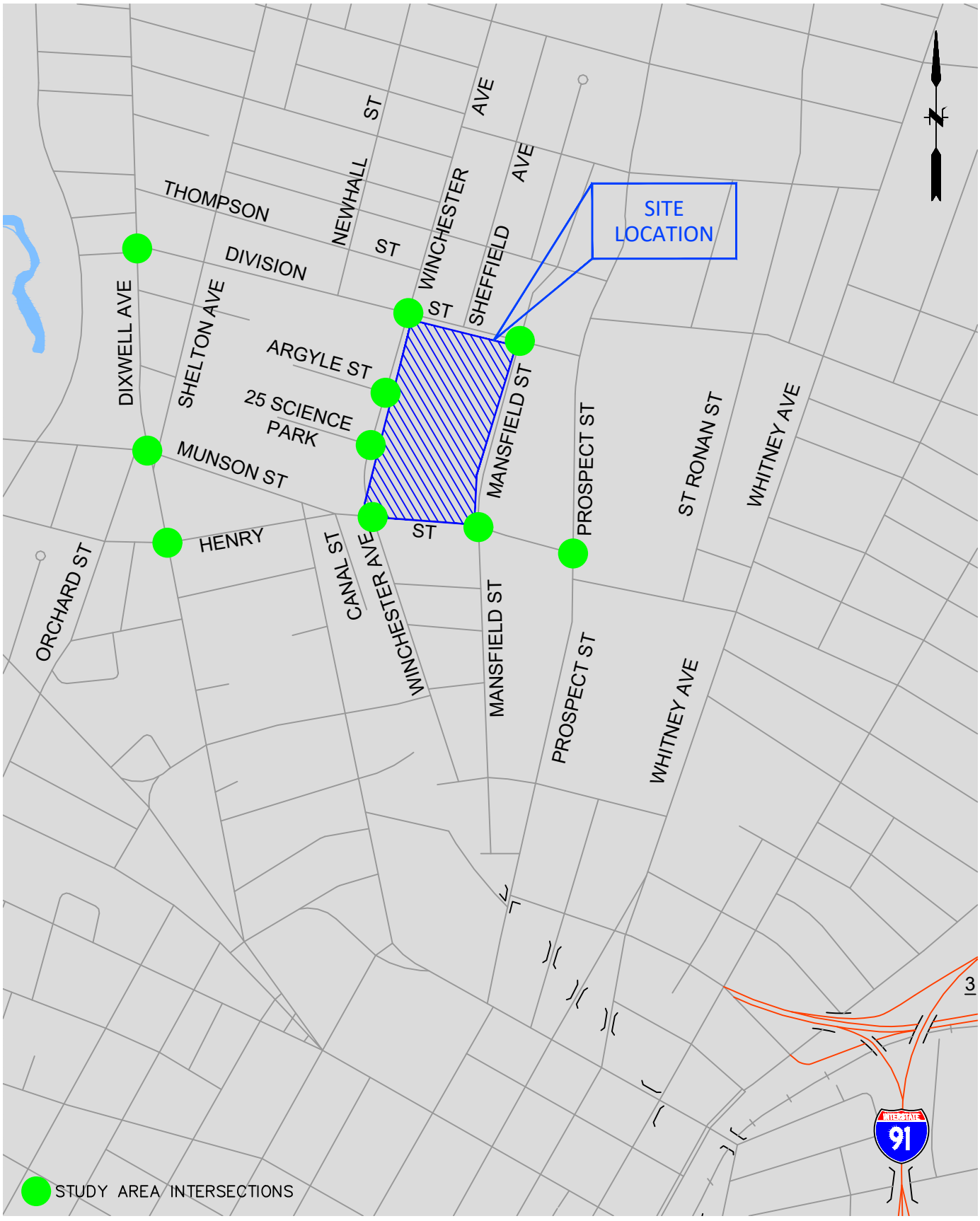
Sincerely,

Mark G. Vertucci, PE, PTOE
Vice President

FUSS & O'NEILL

Appendix A

Figures



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Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 CTB File: FO.STB
LAYER STATE:
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HORZ.: 1" = 1000'
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HORZ.:
VERT.:
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GRAPHIC SCALE

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SVP, DEVELOPMENT

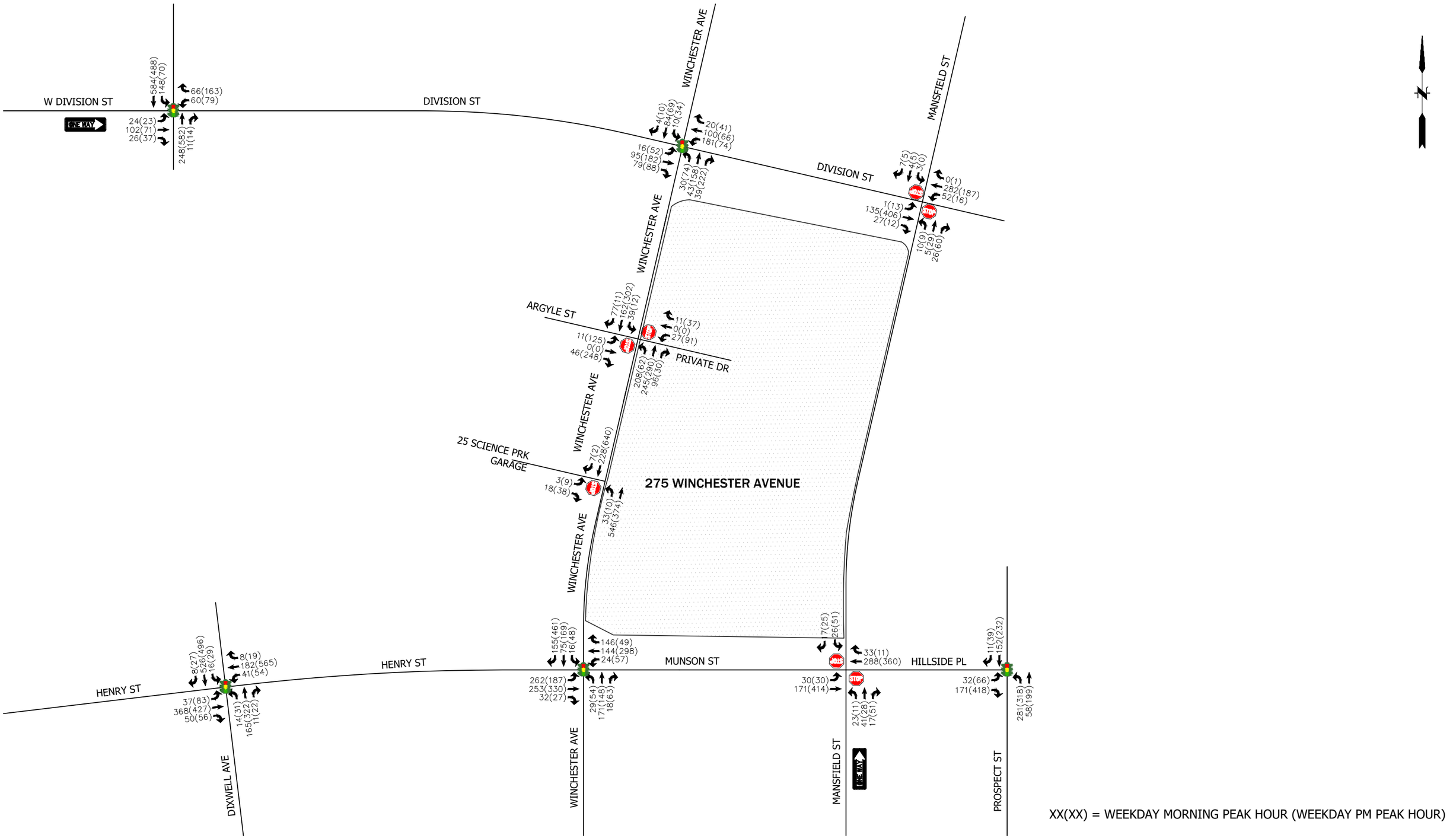
LOCATION FIGURE

275 WINCHESTER AVENUE

NEW HAVEN CONNECTICUT

PROJ. No.: 20090865.A61
DATE: OCTOBER 2021

LOC-01



XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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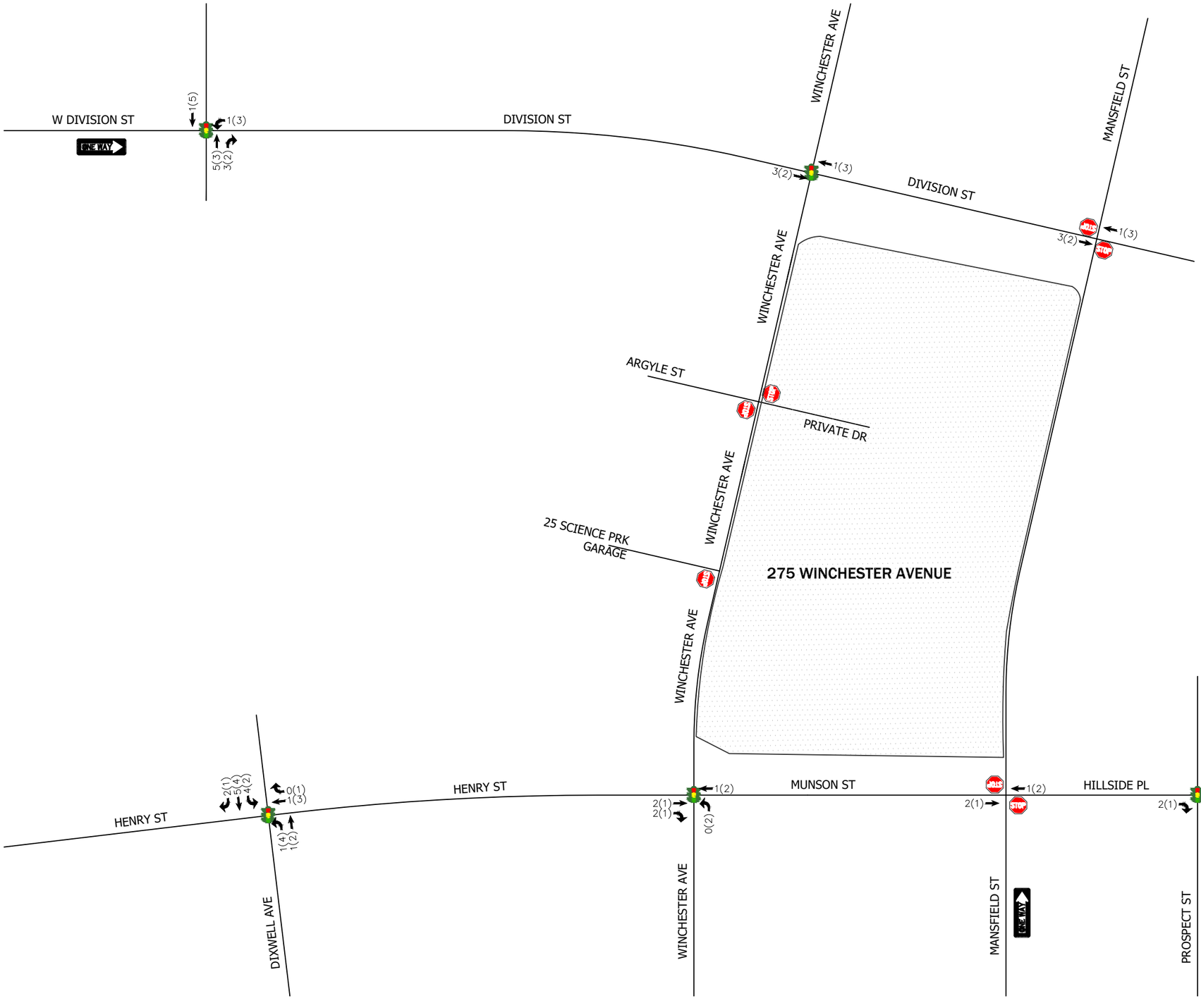
FIGURE 2: 2026 GROWN TRAFFIC VOLUMES

PROJ. NO: 20090865.A61 | 275 Winchester Avenue | OCTOBER 2021



SITE GENERATED TRAFFIC VOLUMES				
	LAND USE CODE	ENTER	EXIT	TOTAL
AM 69 APARTMENT UNITS	221 - MID-RISE HOUSING	6	19	25
PM 69 APARTMENT UNITS	221 - MID-RISE HOUSING	19	12	31

XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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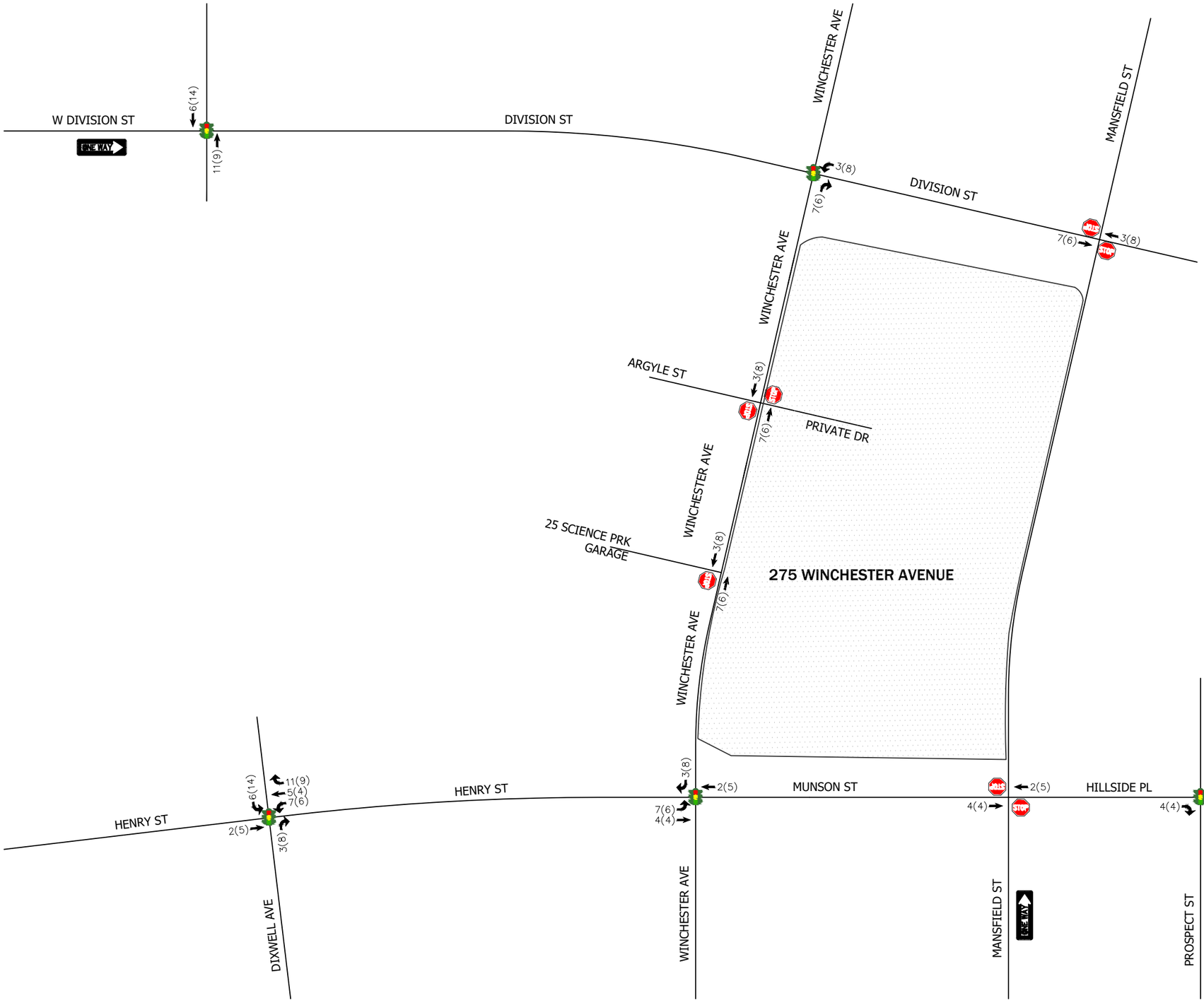
FIGURE 3: BACKGROUND GENERATOR - 316+340 DIXWELL AVENUE & 783 ORCHARD STREET

PROJ. NO: 20090865.A61 | 275 Winchester Avenue | OCTOBER 2021



SITE GENERATED TRAFFIC VOLUMES				
	LAND USE CODE	ENTER	EXIT	TOTAL
AM 150 APARTMENT UNITS	221 - MID-RISE HOUSING	14	40	54
AM 4,000 SF VARIETY STORE	814 - VARIETY STORE	7	6	13
AM TOTAL		21	46	67
PM 150 APARTMENT UNITS	221 - MID-RISE HOUSING	40	26	66
PM 4,000 SF VARIETY STORE	814 - VARIETY STORE	14	13	27
PM TOTAL		54	39	93

XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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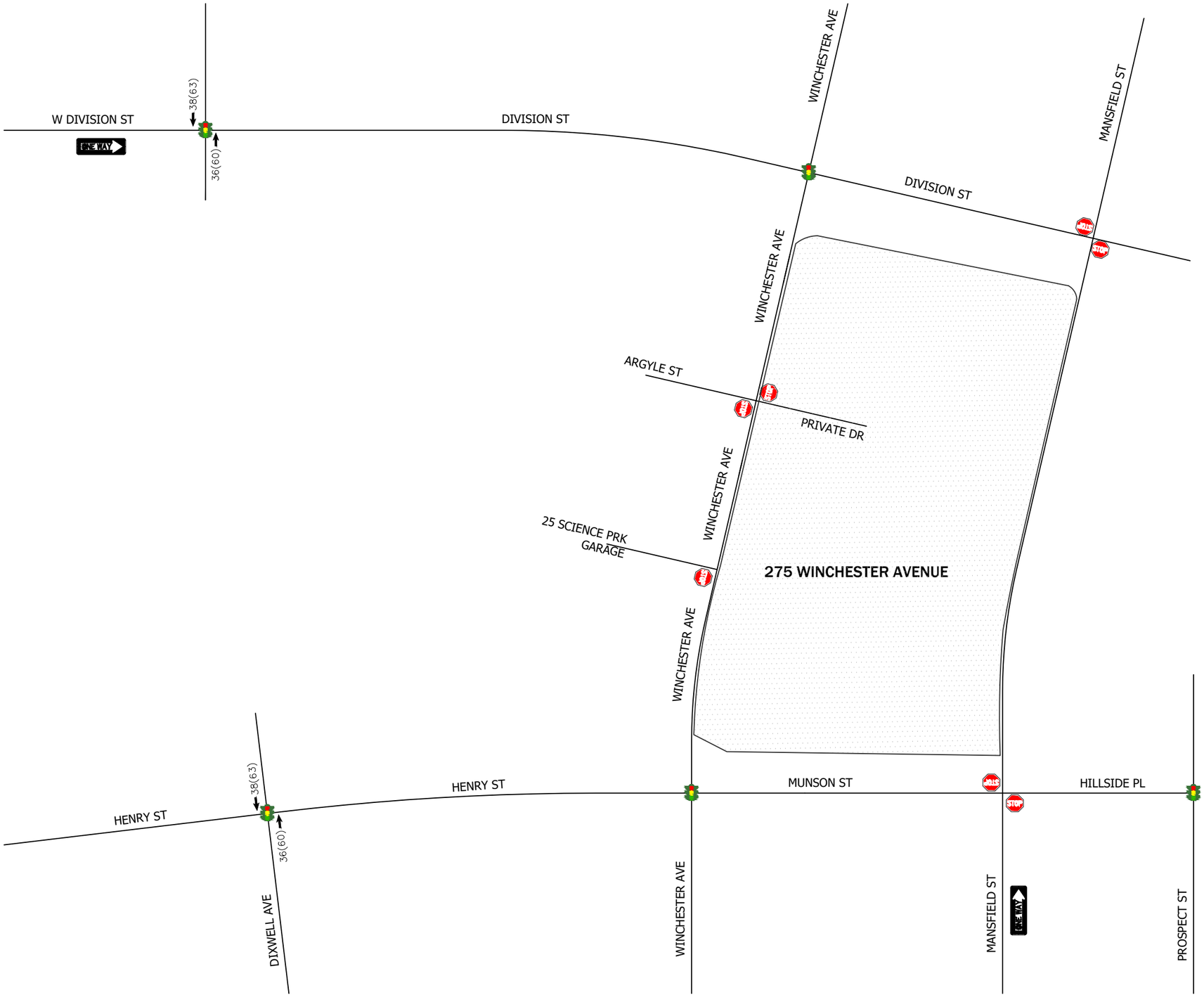
FIGURE 4: BACKGROUND GENERATOR - ASHMUN & CANAL

PROJ. NO: 20090865.A61 | 275 Winchester Avenue | OCTOBER 2021



SITE GENERATED TRAFFIC VOLUMES				
	LAND USE CODE	ENTER	EXIT	TOTAL
AM 150 APARTMENT UNITS	220 - LOW-RISE HOUSING	16	54	70
AM 50,000 SF SHOPPING CENTER	820 - SHOPPING CENTER	110	67	177
AM TOTAL		126	121	247
PM 150 APARTMENT UNITS	220 - LOW-RISE HOUSING	53	32	85
PM 50,000 SF SHOPPING CENTER	820 - SHOPPING CENTER	156	169	325
PM TOTAL		209	201	410

XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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FIGURE 5: BACKGROUND GENERATOR - DIXWELL PLAZA

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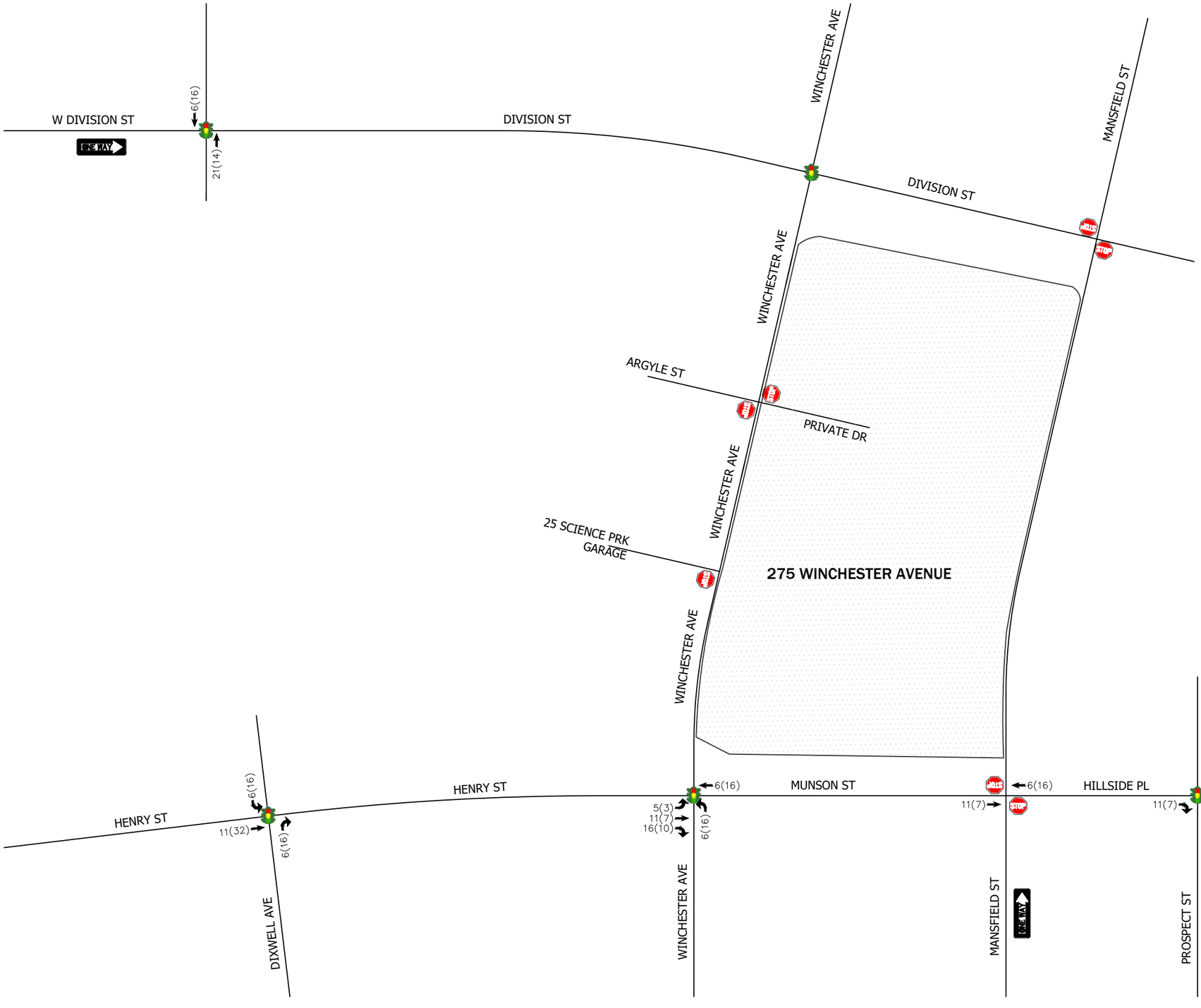

SITE GENERATED TRAFFIC VOLUMES				
	LAND USE CODE	ENTER	EXIT	TOTAL
AM 397 HOUSING UNITS	221 - MID-RISE HOUSING	39	107	146
PM 397 HOUSING UNITS	221 - MID-RISE HOUSING	106	68	174

XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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FIGURE 6: BACKGROUND GENERATOR - 201 MUNSON

PROJ. NO: 20090865.A61 | 275 Winchester Avenue | OCTOBER 2021

W DIVISION ST
ONE WAY
37(7)
6(36)
DIVISION ST
WINCHESTER AVE
MANSFIELD ST
37(7)
22(4)
6(36)
4(21)
DIVISION ST
4(21)
22(4)
WINCHESTER AVE
ARGYLE ST
59(11)
10(57)
14(85)
PRIVATE DR
88(16)
WINCHESTER AVE
25 SCIENCE PRK GARAGE
14(85)
275 WINCHESTER AVENUE
88(16)
WINCHESTER AVE
HENRY ST
2(14)
3(14)
HENRY ST
14(2)
15(3)
DIXWELL AVE
5(28)
6(36)
3(21)
22(4)
MUNSON ST
29(5)
37(7)
WINCHESTER AVE
22(4)
HILLSIDE PL
3(21)
3(21)
22(4)
MANSFIELD ST
ONE WAY
PROSPECT ST

SITE GENERATED TRAFFIC VOLUMES				
	LAND USE CODE	ENTER	EXIT	TOTAL
AM 147,155 SF OFFICE	710 - GENERAL OFFICE BUILDING	147	24	171
PM 147,155 SF OFFICE	710 - GENERAL OFFICE BUILDING	27	142	169

XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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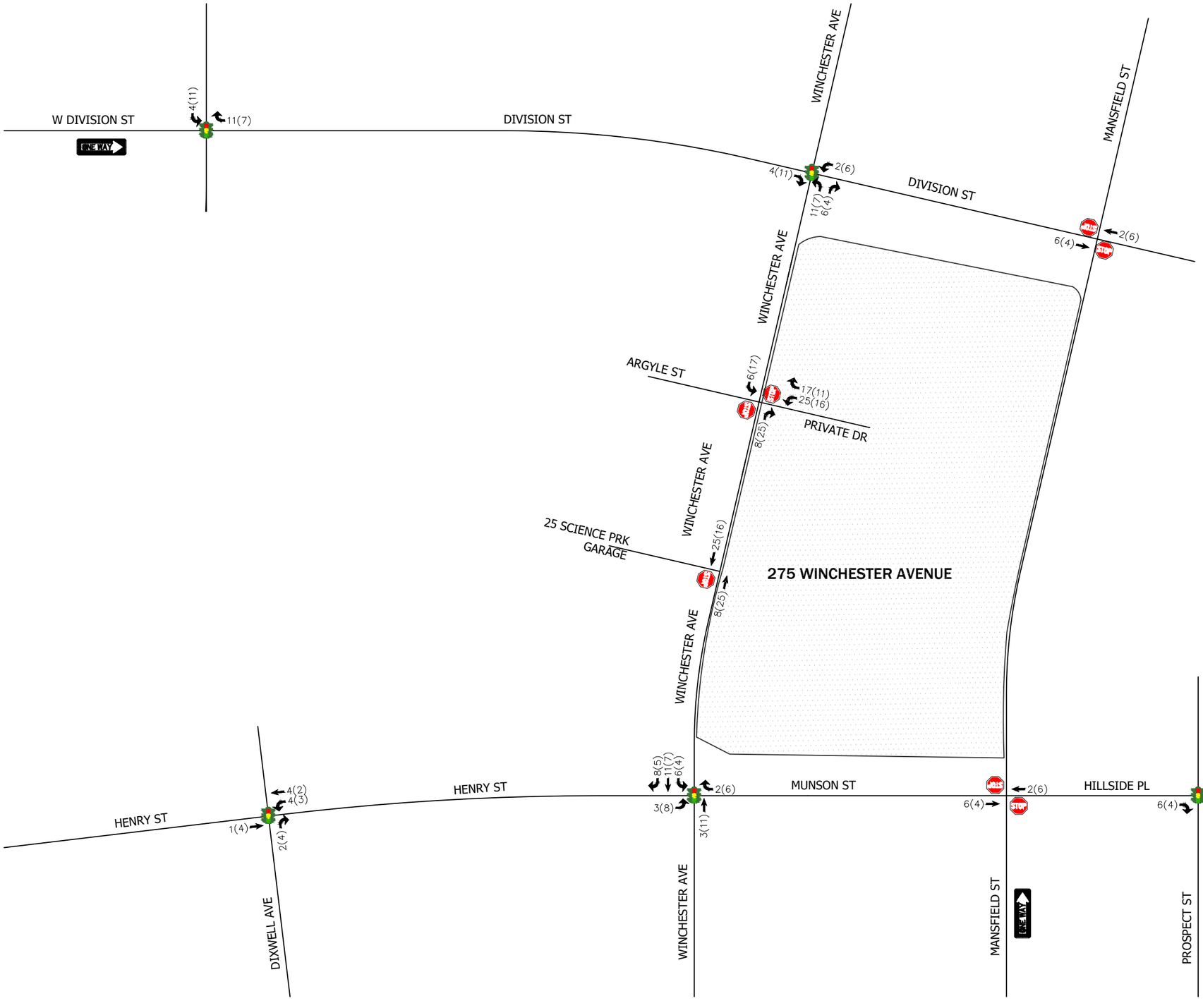
FIGURE 7: BACKGROUND GENERATOR - 115 MUNSON

PROJ. NO: 20090865.A61 | 275 Winchester Avenue | OCTOBER 2021



SITE GENERATED TRAFFIC VOLUMES				
	LAND USE CODE	ENTER	EXIT	TOTAL
AM 156 APARTMENT UNITS	221 - MID-RISE HOUSING	14	42	56
PM 156 APARTMENT UNITS	221 - MID-RISE HOUSING	42	27	69

XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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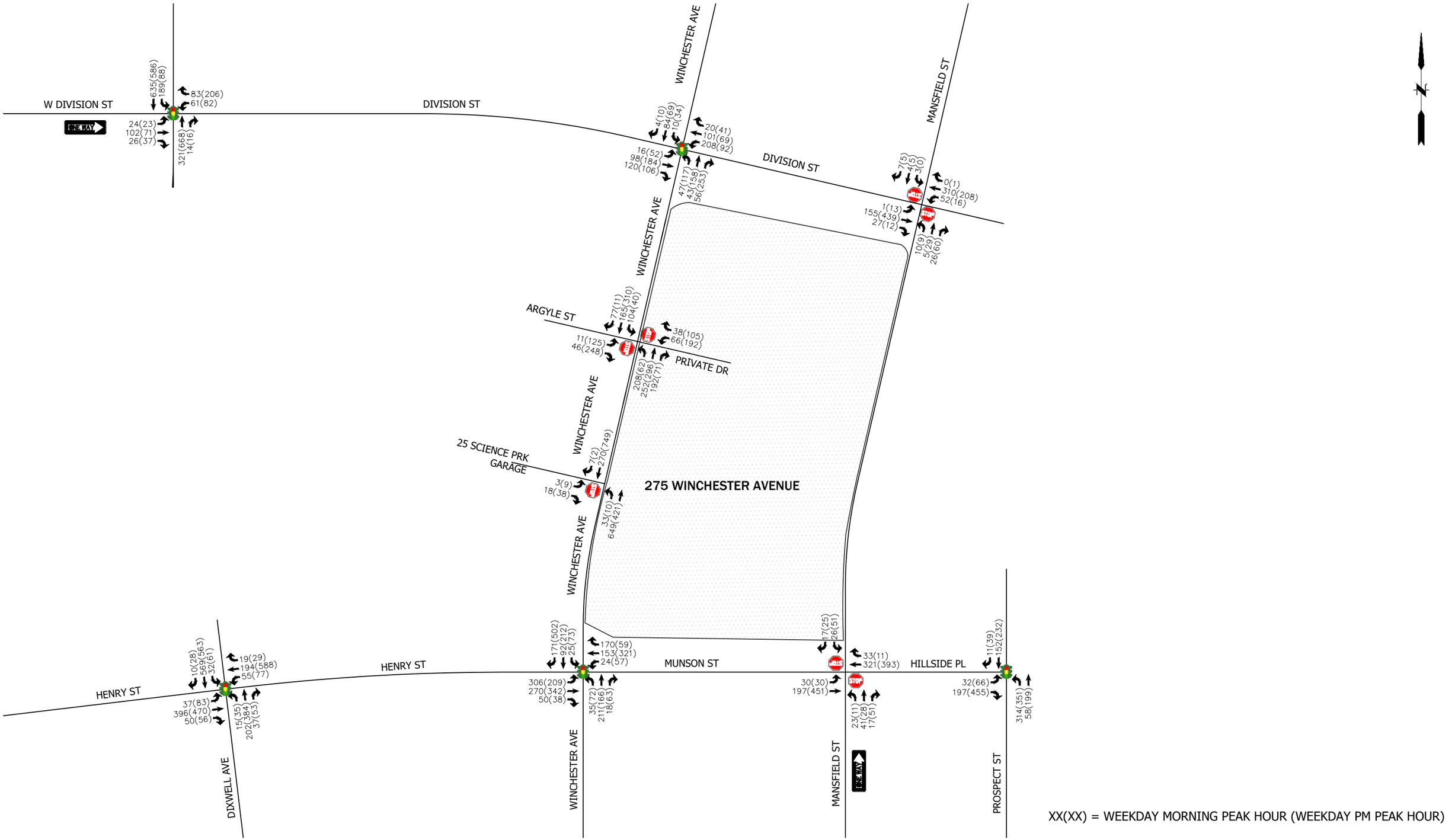
FIGURE 8: BACKGROUND GENERATOR - WINCHESTER LOFTS

PROJ. NO: 20090865.A61 | 275 Winchester Avenue | OCTOBER 2021



XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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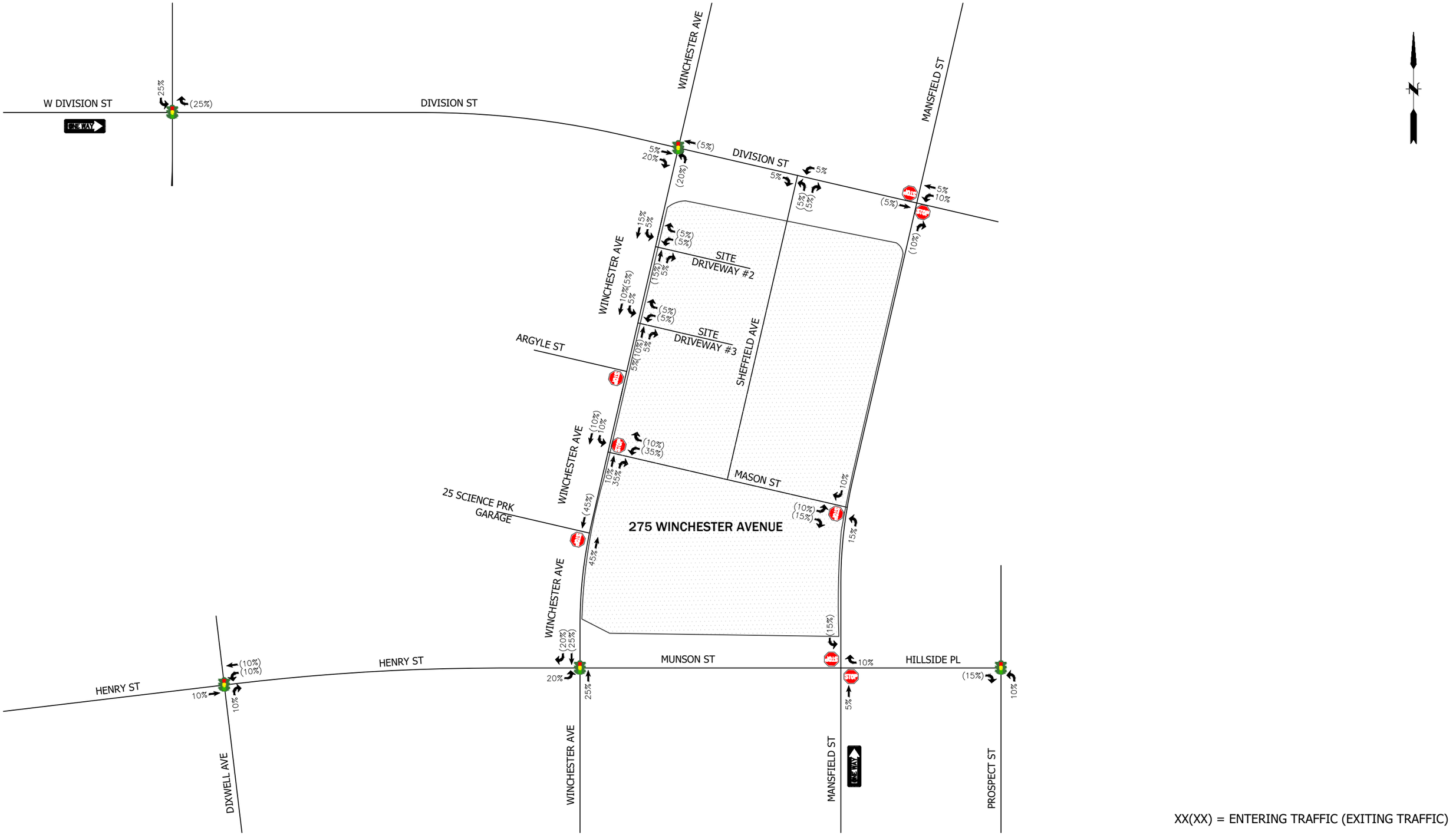
FIGURE 9: 2026 BACKGROUND TRAFFIC CONDITIONS

PROJ. NO: 20090865.A61 | 275 Winchester Avenue | OCTOBER 2021



XX(XX) = ENTERING TRAFFIC (EXITING TRAFFIC)

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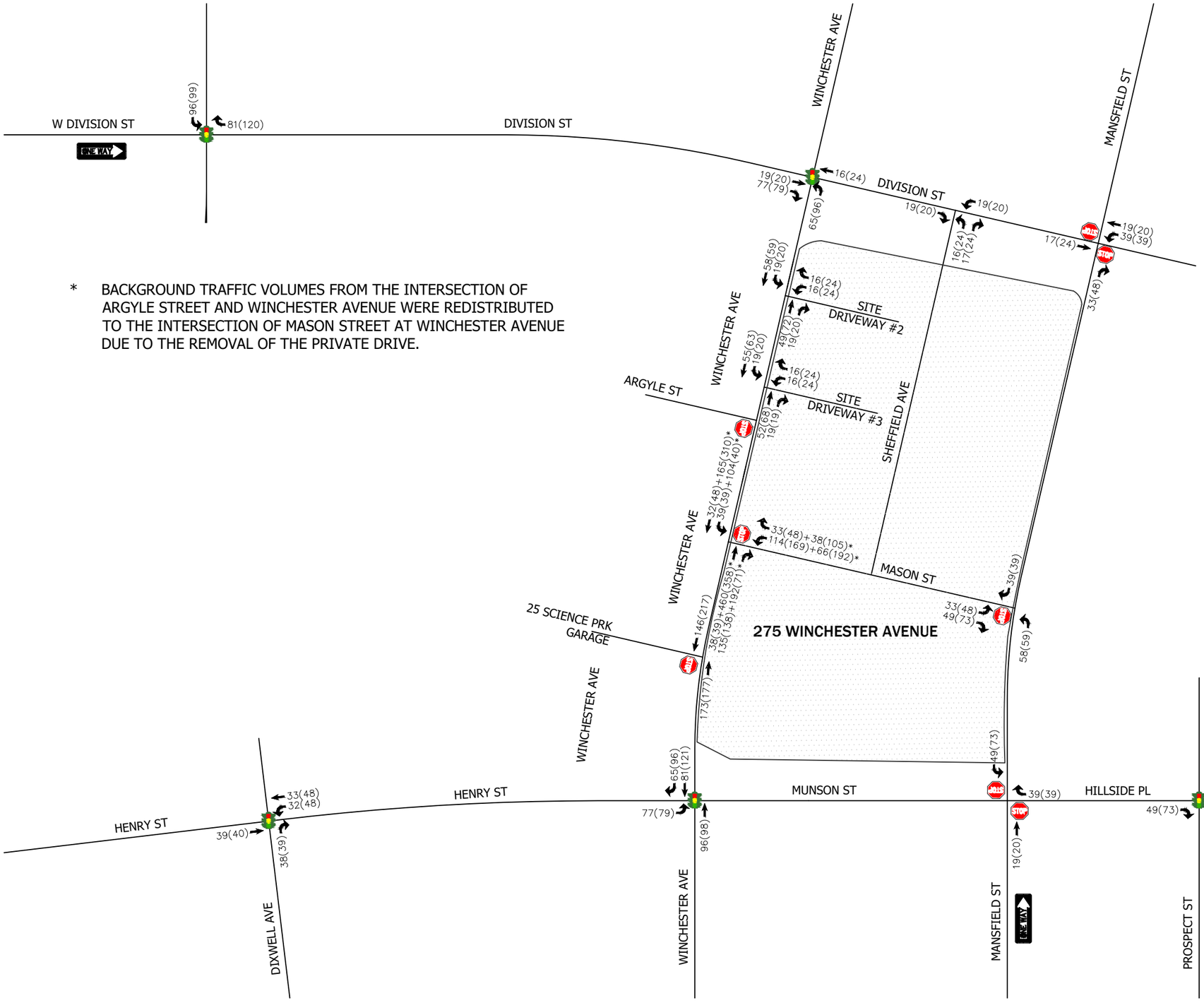
FIGURE 10: SITE GENERATED TRAFFIC DISTRIBUTION

PROJ. NO: 20090865.A61 | 275 Winchester Avenue | OCTOBER 2021



* BACKGROUND TRAFFIC VOLUMES FROM THE INTERSECTION OF ARGYLE STREET AND WINCHESTER AVENUE WERE REDISTRIBUTED TO THE INTERSECTION OF MASON STREET AT WINCHESTER AVENUE DUE TO THE REMOVAL OF THE PRIVATE DRIVE.

SITE GENERATED TRAFFIC VOLUMES

	LAND USE CODE	ENTER	EXIT	TOTAL
AM 1,000 APARTMENT UNITS	221 - MID-RISE HOUSING	94	266	360
AM 147,155 SF OFFICE	710 - GENERAL OFFICE BUILDING	147	24	171
AM EXISTING 147,155 SF OFFICE (40% OCCUPIED)	710 - GENERAL OFFICE BUILDING	-59	-10	-69
AM 175,000 SF OFFICE	710 - GENERAL OFFICE BUILDING	175	28	203
AM 12,000 SF PHARMACY	880 - PHARMACY	31	16	47
AM 8,000 SF VARIETY STORE	814 - VARIETY STORE	14	11	25
AM 5,000 SF RESTAURANT	932 - HIGH-TURNOVER RESTAURANT	27	23	50
AM 105,824 SF OFFICE	710 - GENERAL OFFICE BUILDING	108	18	126
AM EXISTING 110,824 SF OFFICE	710 - GENERAL OFFICE BUILDING	-112	-19	-131
AM 2,000 SF LIQUOR STORE	899 - LIQUOR STORE	5	5	10
AM 29,254 SF OFFICE	710 - GENERAL OFFICE BUILDING	46	8	54
AM EXISTING 31,254 SF OFFICE	710 - GENERAL OFFICE BUILDING	-48	-8	-56
AM TOTAL		428	362	790
TRANSIT CREDIT (-10%)		-43	-36	-79
AM GRAND TOTAL		**385**	**326**	**711**
PM 1,000 APARTMENT UNITS	221 - MID-RISE HOUSING	268	172	440
PM 147,155 SF OFFICE	710 - GENERAL OFFICE BUILDING	27	142	169
PM EXISTING 147,155 SF OFFICE (40% OCCUPIED)	710 - GENERAL OFFICE BUILDING	-11	-57	-68
PM 175,000 SF OFFICE	710 - GENERAL OFFICE BUILDING	32	169	201
PM 12,000 SF PHARMACY	880 - PHARMACY	50	52	102
PM 8,000 SF VARIETY STORE	814 - VARIETY STORE	28	27	55
PM 5,000 SF RESTAURANT	932 - HIGH-TURNOVER RESTAURANT	30	19	49
PM 105,824 SF OFFICE	710 - GENERAL OFFICE BUILDING	19	103	122
PM EXISTING 110,824 SF OFFICE	710 - GENERAL OFFICE BUILDING	-20	-107	-127
PM 2,000 SF LIQUOR STORE	899 - LIQUOR STORE	16	17	33
PM 29,254 SF OFFICE	710 - GENERAL OFFICE BUILDING	5	30	35
PM EXISTING 31,254 SF OFFICE	710 - GENERAL OFFICE BUILDING	-6	-32	-38
PM TOTAL		438	535	973
TRANSIT CREDIT (-10%)		-44	-53	-97
PM GRAND TOTAL		**394**	**482**	**876**

XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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FIGURE 11: SITE GENERATED TRAFFIC VOLUMES

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XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)

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FIGURE 12: 2026 COMBINED TRAFFIC VOLUMES

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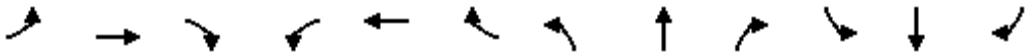
Appendix B

Intersection Capacity Analysis Worksheets
2026 Background Traffic Volumes
Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	102	26	61	0	83	0	321	14	189	635	0
Future Volume (vph)	24	102	26	61	0	83	0	321	14	189	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.922			0.995				
Flt Protected		0.992			0.979						0.989	
Satd. Flow (prot)	0	1721	0	0	1466	0	0	1719	0	0	1790	0
Flt Permitted		0.923			0.701						0.816	
Satd. Flow (perm)	0	1601	0	0	1050	0	0	1719	0	0	1477	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			81			3				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		300			484			1195			450	
Travel Time (s)		8.2			13.2			32.6			12.3	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Adj. Flow (vph)	25	105	27	63	0	86	0	331	14	195	655	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	157	0	0	149	0	0	345	0	0	850	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Detector Phase	3	3		3	3			1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	
Minimum Split (s)	10.0	10.0		10.0	10.0			12.0		12.0	12.0	
Total Split (s)	24.0	24.0		24.0	24.0			40.0		40.0	40.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%			50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0			35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag								Lead		Lead	Lead	
Lead-Lag Optimize?								Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2		0.2	0.2	
Recall Mode	None	None		None	None			C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		11.6			11.6			55.2			55.2	
Actuated g/C Ratio		0.14			0.14			0.69			0.69	
v/c Ratio		0.65			0.67			0.29			0.83	
Control Delay		41.6			30.8			7.8			22.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		41.6			30.8			7.8			22.2	
LOS		D			C			A			C	
Approach Delay		41.6			30.8			7.8			22.2	

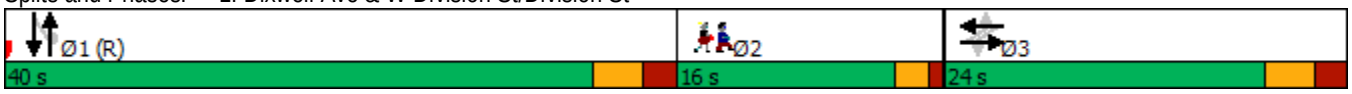
Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	20%
Maximum Green (s)	13.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	7.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			C			A			C	
Queue Length 50th (ft)		69			32			46			218	
Queue Length 95th (ft)		120			88			177			#752	
Internal Link Dist (ft)		220			404			1115			370	
Turn Bay Length (ft)												
Base Capacity (vph)		389			311			1186			1019	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.40			0.48			0.29			0.83	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 92.7%		ICU Level of Service F	
Analysis Period (min) 15			

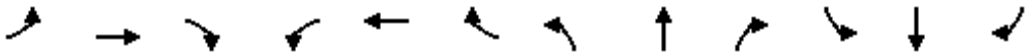
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixwell Ave & W Division St/Division St



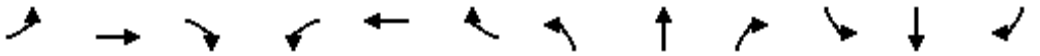
Lane Group	Ø2
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	102	26	61	0	83	0	321	14	189	635	0
Future Volume (vph)	24	102	26	61	0	83	0	321	14	189	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.92			0.99			1.00	
Flt Protected		0.99			0.98			1.00			0.99	
Satd. Flow (prot)		1721			1466			1718			1789	
Flt Permitted		0.92			0.70			1.00			0.82	
Satd. Flow (perm)		1602			1050			1718			1476	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	25	105	27	63	0	86	0	331	14	195	655	0
RTOR Reduction (vph)	0	10	0	0	69	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	147	0	0	80	0	0	344	0	0	850	0
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Actuated Green, G (s)		11.6			11.6			52.8			52.8	
Effective Green, g (s)		11.6			11.6			52.8			52.8	
Actuated g/C Ratio		0.14			0.14			0.66			0.66	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		232			152			1133			974	
v/s Ratio Prot								0.20				
v/s Ratio Perm		c0.09			0.08						c0.58	
v/c Ratio		0.63			0.52			0.30			0.87	
Uniform Delay, d1		32.2			31.6			5.8			10.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.1			1.5			0.7			10.7	
Delay (s)		36.3			33.2			6.5			21.6	
Level of Service		D			C			A			C	
Approach Delay (s)		36.3			33.2			6.5			21.6	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



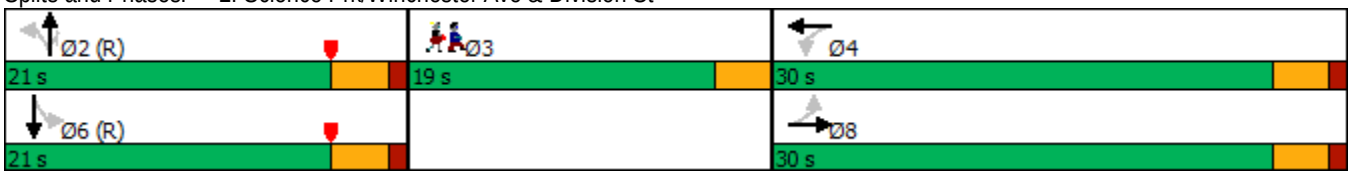
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	98	120	208	101	20	47	43	56	10	84	4
Future Volume (vph)	16	98	120	208	101	20	47	43	56	10	84	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	16	12	12	11	12	12	16	12
Storage Length (ft)	85		0	0		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	65			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.918			0.975				0.850		0.995	
Flt Protected	0.950			0.950				0.975			0.995	
Satd. Flow (prot)	1770	1710	0	1652	2058	0	0	1756	1583	0	2090	0
Flt Permitted	0.673			0.510				0.853			0.981	
Satd. Flow (perm)	1254	1710	0	887	2058	0	0	1536	1583	0	2061	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1609			389			208			307	
Travel Time (s)		36.6			8.8			4.7			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	107	130	226	110	22	51	47	61	11	91	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	237	0	226	132	0	0	98	61	0	106	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Detector Phase	8	8		4	4		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	30.0	30.0		30.0	30.0		21.0	21.0	21.0	21.0	21.0	
Total Split (%)	42.9%	42.9%		42.9%	42.9%		30.0%	30.0%	30.0%	30.0%	30.0%	
Maximum Green (s)	26.0	26.0		26.0	26.0		17.0	17.0	17.0	17.0	17.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	20.8	20.8		20.8	20.8			41.2	41.2		41.2	
Actuated g/C Ratio	0.30	0.30		0.30	0.30			0.59	0.59		0.59	
v/c Ratio	0.05	0.47		0.86	0.22			0.11	0.07		0.09	
Control Delay	14.2	21.7		51.2	17.3			8.9	8.7		8.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	21.0
Total Split (s)	19.0
Total Split (%)	27%
Maximum Green (s)	16.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	14.2	21.7		51.2	17.3			8.9	8.7		8.5	
LOS	B	C		D	B			A	A		A	
Approach Delay		21.2			38.7			8.8			8.5	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)	5	82		90	42			17	10		18	
Queue Length 95th (ft)	15	117		149	66			48	33		49	
Internal Link Dist (ft)		1529			309			128			227	
Turn Bay Length (ft)	85											
Base Capacity (vph)	476	650		337	782			904	932		1214	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.04	0.36		0.67	0.17			0.11	0.07		0.09	

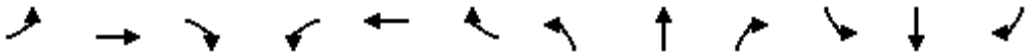
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Science Prk/Winchester Ave & Division St



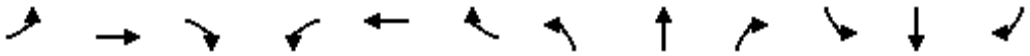
Lane Group	Ø3
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	98	120	208	101	20	47	43	56	10	84	4
Future Volume (vph)	16	98	120	208	101	20	47	43	56	10	84	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	16	12	12	11	12	12	16	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.92		1.00	0.97			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.99	
Satd. Flow (prot)	1770	1709		1652	2058			1755	1583		2090	
Flt Permitted	0.67	1.00		0.51	1.00			0.85	1.00		0.98	
Satd. Flow (perm)	1253	1709		886	2058			1535	1583		2060	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	107	130	226	110	22	51	47	61	11	91	4
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	17	237	0	226	132	0	0	98	61	0	106	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	20.8	20.8		20.8	20.8			41.2	41.2		41.2	
Effective Green, g (s)	20.8	20.8		20.8	20.8			41.2	41.2		41.2	
Actuated g/C Ratio	0.30	0.30		0.30	0.30			0.59	0.59		0.59	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	372	507		263	611			903	931		1212	
v/s Ratio Prot		0.14			0.06							
v/s Ratio Perm	0.01			c0.26				c0.06	0.04		0.05	
v/c Ratio	0.05	0.47		0.86	0.22			0.11	0.07		0.09	
Uniform Delay, d1	17.5	20.1		23.2	18.5			6.3	6.2		6.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.2		22.5	0.1			0.2	0.1		0.1	
Delay (s)	17.5	20.3		45.7	18.5			6.6	6.3		6.4	
Level of Service	B	C		D	B			A	A		A	
Approach Delay (s)		20.1			35.7			6.5			6.4	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	155	27	52	310	0	10	5	26	3	4	7
Future Volume (vph)	1	155	27	52	310	0	10	5	26	3	4	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	12	12	12	12	12	12	12	12
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978						0.914			0.928	
Flt Protected					0.993			0.988			0.990	
Satd. Flow (prot)	0	3231	0	0	1850	0	0	1682	0	0	1711	0
Flt Permitted					0.993			0.988			0.990	
Satd. Flow (perm)	0	3231	0	0	1850	0	0	1682	0	0	1711	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			460			1047			403	
Travel Time (s)		10.0			10.5			23.8			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	168	29	57	337	0	11	5	28	3	4	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	394	0	0	44	0	0	15	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.7%		ICU Level of Service A	
Analysis Period (min) 15			

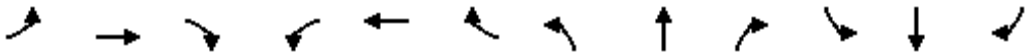
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	155	27	52	310	0	10	5	26	3	4	7
Future Vol, veh/h	1	155	27	52	310	0	10	5	26	3	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	168	29	57	337	0	11	5	28	3	4	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	337	0	0	197	0	0	642	636	99	540	650	337
Stage 1	-	-	-	-	-	-	185	185	-	451	451	-
Stage 2	-	-	-	-	-	-	457	451	-	89	199	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1221	-	-	1374	-	-	373	395	938	438	387	704
Stage 1	-	-	-	-	-	-	800	746	-	587	570	-
Stage 2	-	-	-	-	-	-	583	570	-	909	736	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1221	-	-	1374	-	-	351	374	938	403	367	704
Mov Cap-2 Maneuver	-	-	-	-	-	-	351	374	-	403	367	-
Stage 1	-	-	-	-	-	-	799	745	-	586	541	-
Stage 2	-	-	-	-	-	-	543	541	-	874	735	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	11.6	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	589	1221	-	-	1374	-	-	495
HCM Lane V/C Ratio	0.076	0.001	-	-	0.041	-	-	0.031
HCM Control Delay (s)	11.6	8	0	-	7.7	0	-	12.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	46	66	0	38	208	252	192	104	165	77
Future Volume (vph)	11	0	46	66	0	38	208	252	192	104	165	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10	12	12	12	12	12	12
Storage Length (ft)	0		0	0		70	100		0	165		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.935			0.952	
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1770	1583	0	1770	1478	1770	1742	0	1770	1773	0
Flt Permitted		0.950			0.950		0.950			0.950		
Satd. Flow (perm)	0	1770	1583	0	1770	1478	1770	1742	0	1770	1773	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		346			188			338			639	
Travel Time (s)		7.9			4.3			7.7			14.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	0	50	72	0	41	226	274	209	113	179	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	50	0	72	41	226	483	0	113	263	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.1%		ICU Level of Service A	
Analysis Period (min) 15			

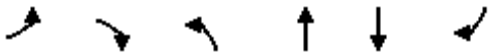
Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	46	66	0	38	208	252	192	104	165	77
Future Vol, veh/h	11	0	46	66	0	38	208	252	192	104	165	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	70	100	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	50	72	0	41	226	274	209	113	179	84

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1298	1382	221	1303	1320	379	263	0	0	483	0	0
Stage 1	447	447	-	831	831	-	-	-	-	-	-	-
Stage 2	851	935	-	472	489	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	139	144	819	138	157	668	1301	-	-	1080	-	-
Stage 1	591	573	-	364	384	-	-	-	-	-	-	-
Stage 2	355	344	-	573	549	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	104	106	819	104	116	668	1301	-	-	1080	-	-
Mov Cap-2 Maneuver	104	106	-	104	116	-	-	-	-	-	-	-
Stage 1	488	513	-	301	317	-	-	-	-	-	-	-
Stage 2	275	284	-	482	491	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	64.1	2.7	2.6
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1301	-	-	104	819	104	668	1080	-	-
HCM Lane V/C Ratio	0.174	-	-	0.115	0.061	0.69	0.062	0.105	-	-
HCM Control Delay (s)	8.3	-	-	44.1	9.7	94.8	10.7	8.7	-	-
HCM Lane LOS	A	-	-	E	A	F	B	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	0.4	0.2	3.5	0.2	0.3	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	18	33	649	270	7
Future Volume (vph)	3	18	33	649	270	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	14	12
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		70			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.996	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1635	0	1770	1925	1979	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1635	0	1770	1925	1979	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	223			332	338	
Travel Time (s)	5.1			7.5	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	20	36	705	293	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	36	705	301	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	33	649	270	7
Future Vol, veh/h	3	18	33	649	270	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	20	36	705	293	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1074	297	301	0	-	0
Stage 1	297	-	-	-	-	-
Stage 2	777	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	243	742	1260	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	236	742	1260	-	-	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	732	-	-	-	-	-
Stage 2	453	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1260	-	568	-	-
HCM Lane V/C Ratio	0.028	-	0.04	-	-
HCM Control Delay (s)	7.9	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

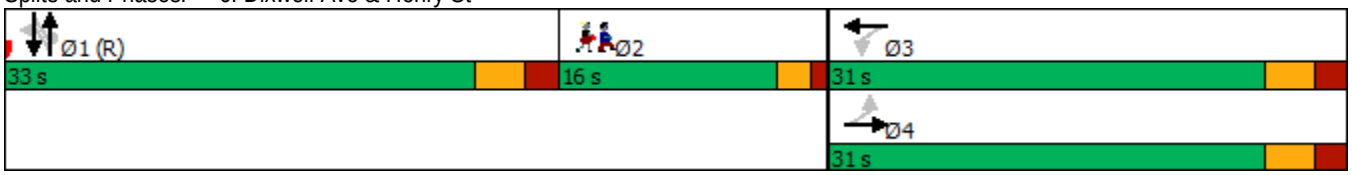
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	396	50	55	194	19	15	202	37	32	569	10
Future Volume (vph)	37	396	50	55	194	19	15	202	37	32	569	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	16	12	12	16	12	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.991			0.980			0.998	
Flt Protected		0.996			0.990			0.997			0.997	
Satd. Flow (prot)	0	1706	0	0	1794	0	0	1706	0	0	1819	0
Flt Permitted		0.956			0.784			0.955			0.973	
Satd. Flow (perm)	0	1637	0	0	1420	0	0	1634	0	0	1775	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			5			12			1	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		407			477			364			549	
Travel Time (s)		11.1			13.0			9.9			15.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Adj. Flow (vph)	40	426	54	59	209	20	16	217	40	34	612	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	520	0	0	288	0	0	273	0	0	657	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Detector Phase	4	4		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		12.0	12.0		12.0	12.0	
Total Split (s)	31.0	31.0		31.0	31.0		33.0	33.0		33.0	33.0	
Total Split (%)	38.8%	38.8%		38.8%	38.8%		41.3%	41.3%		41.3%	41.3%	
Maximum Green (s)	26.0	26.0		26.0	26.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag							Lead	Lead		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		0.2	0.2		0.2	0.2	
Recall Mode	Min	Min		Min	Min		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		30.0			30.0			37.8			37.8	
Actuated g/C Ratio		0.38			0.38			0.47			0.47	
v/c Ratio		0.84			0.54			0.35			0.78	
Control Delay		36.5			30.5			16.0			28.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		36.5			30.5			16.0			28.4	
LOS		D			C			B			C	

Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	20%
Maximum Green (s)	13.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	1.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		36.5			30.5			16.0			28.4	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		222			135			76			256	
Queue Length 95th (ft)		#395			m180			169			#571	
Internal Link Dist (ft)		327			397			284			469	
Turn Bay Length (ft)												
Base Capacity (vph)		620			536			778			839	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.84			0.54			0.35			0.78	

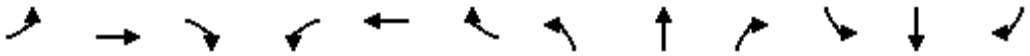
Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 29.2		Intersection LOS: C	
Intersection Capacity Utilization 84.9%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Dixwell Ave & Henry St



Lane Group	Ø2
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	396	50	55	194	19	15	202	37	32	569	10
Future Volume (vph)	37	396	50	55	194	19	15	202	37	32	569	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	16	12	12	16	12	12	16	12
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.98			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1706			1793			1706			1819	
Flt Permitted		0.96			0.78			0.95			0.97	
Satd. Flow (perm)		1637			1420			1634			1775	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	426	54	59	209	20	16	217	40	34	612	11
RTOR Reduction (vph)	0	5	0	0	3	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	515	0	0	285	0	0	266	0	0	656	0
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Actuated Green, G (s)		30.0			30.0			35.4			35.4	
Effective Green, g (s)		30.0			30.0			35.4			35.4	
Actuated g/C Ratio		0.38			0.38			0.44			0.44	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		613			532			723			785	
v/s Ratio Prot												
v/s Ratio Perm		c0.31			0.20			0.16			c0.37	
v/c Ratio		0.84			0.54			0.37			0.84	
Uniform Delay, d1		22.8			19.6			14.9			19.7	
Progression Factor		1.00			1.40			1.00			1.00	
Incremental Delay, d2		9.7			0.5			1.4			10.3	
Delay (s)		32.5			27.8			16.3			30.0	
Level of Service		C			C			B			C	
Approach Delay (s)		32.5			27.8			16.3			30.0	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	306	270	50	24	153	170	35	211	18	25	92	171
Future Volume (vph)	306	270	50	24	153	170	35	211	18	25	92	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	16	12	12	16	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.934			0.991				0.850
Flt Protected	0.950				0.997			0.993			0.989	
Satd. Flow (prot)	1486	1638	0	0	1592	0	0	1683	0	0	1658	1283
Flt Permitted	0.403				0.960			0.937			0.744	
Satd. Flow (perm)	631	1638	0	0	1533	0	0	1588	0	0	1247	1283
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												186
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			824			435			332	
Travel Time (s)		5.3			18.7			9.9			7.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)					0			0				0
Adj. Flow (vph)	333	293	54	26	166	185	38	229	20	27	100	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	333	347	0	0	377	0	0	287	0	0	127	186
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Detector Phase	3	3 8		4	4		2	2		6	6	3
Switch Phase												
Minimum Initial (s)	6.0			6.0	6.0		10.0	10.0		10.0	10.0	6.0
Minimum Split (s)	9.1			11.0	11.0		15.0	15.0		15.0	15.0	9.1
Total Split (s)	12.0			20.0	20.0		19.0	19.0		19.0	19.0	12.0
Total Split (%)	15.0%			25.0%	25.0%		23.8%	23.8%		23.8%	23.8%	15.0%
Maximum Green (s)	8.9			15.0	15.0		14.0	14.0		14.0	14.0	8.9
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.1			2.0	2.0		2.0	2.0		2.0	2.0	0.1
Lost Time Adjust (s)	0.0				0.0			0.0			0.0	0.0
Total Lost Time (s)	3.1				5.0			5.0			5.0	3.1
Lead/Lag	Lag											Lag
Lead-Lag Optimize?	Yes											Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None			None	None		C-Max	C-Max		C-Max	C-Max	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	54.8	57.9			27.0			14.0			14.0	44.9
Actuated g/C Ratio	0.68	0.72			0.34			0.18			0.18	0.56
v/c Ratio	0.47	0.29			0.73			1.04			0.58	0.23
Control Delay	8.4	6.8			31.7			99.4			42.4	2.4
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	8.4	6.8			31.7			99.4			42.4	2.4
LOS	A	A			C			F			D	A

Lane Group	Ø5	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	5	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	6.0
Minimum Split (s)	29.0	11.0
Total Split (s)	29.0	20.0
Total Split (%)	36%	25%
Maximum Green (s)	25.0	15.0
Yellow Time (s)	4.0	3.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	2.0
Recall Mode	None	None
Walk Time (s)	7.0	
Flash Dont Walk (s)	18.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		

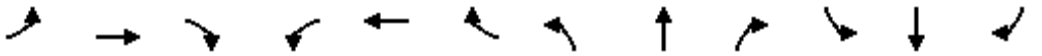
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		7.6			31.7			99.4			18.6	
Approach LOS		A			C			F			B	
Queue Length 50th (ft)	114	115			148			~156			59	0
Queue Length 95th (ft)	m40	m40			257			#304			#123	27
Internal Link Dist (ft)		154			744			355			252	
Turn Bay Length (ft)												
Base Capacity (vph)	708	1185			517			277			218	801
Starvation Cap Reductn	0	0			0			0			0	0
Spillback Cap Reductn	0	0			0			0			0	0
Storage Cap Reductn	0	0			0			0			0	0
Reduced v/c Ratio	0.47	0.29			0.73			1.04			0.58	0.23

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 31.1		Intersection LOS: C	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 7: Winchester Ave & Munson St

Lane Group	Ø5	Ø8
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

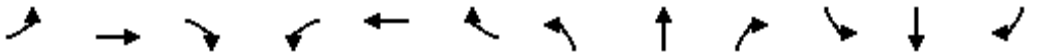
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	306	270	50	24	153	170	35	211	18	25	92	171
Future Volume (vph)	306	270	50	24	153	170	35	211	18	25	92	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	16	12	12	16	12	12	12	12
Total Lost time (s)	3.1	3.1			5.0			5.0			5.0	3.1
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.98			0.93			0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.99			0.99	1.00
Satd. Flow (prot)	1486	1637			1591			1683			1659	1282
Flt Permitted	0.40	1.00			0.96			0.94			0.74	1.00
Satd. Flow (perm)	630	1637			1532			1587			1248	1282
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	333	293	54	26	166	185	38	229	20	27	100	186
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	93
Lane Group Flow (vph)	333	347	0	0	377	0	0	287	0	0	127	93
Parking (#/hr)					0			0				0
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Actuated Green, G (s)	52.9	56.0			27.0			14.0			14.0	39.9
Effective Green, g (s)	52.9	56.0			27.0			14.0			14.0	39.9
Actuated g/C Ratio	0.66	0.70			0.34			0.18			0.18	0.50
Clearance Time (s)	3.1				5.0			5.0			5.0	3.1
Vehicle Extension (s)	2.0				2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	693	1145			517			277			218	639
v/s Ratio Prot	c0.16	0.21										0.05
v/s Ratio Perm	0.16				c0.25			c0.18			0.10	0.03
v/c Ratio	0.48	0.30			0.73			1.04			0.58	0.15
Uniform Delay, d1	7.0	4.6			23.3			33.0			30.3	10.8
Progression Factor	1.53	1.55			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	0.0			4.3			63.8			10.9	0.0
Delay (s)	10.9	7.1			27.6			96.8			41.2	10.9
Level of Service	B	A			C			F			D	B
Approach Delay (s)		9.0			27.6			96.8			23.2	
Approach LOS		A			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.1
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	197	0	0	321	33	23	41	17	26	0	17
Future Volume (vph)	30	197	0	0	321	33	23	41	17	26	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	15	12	12	16	12	11	10	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.987			0.972			0.865	
Flt Protected		0.993						0.986		0.950		
Satd. Flow (prot)	0	1887	0	0	1820	0	0	1639	0	1540	0	0
Flt Permitted		0.993						0.986		0.950		
Satd. Flow (perm)	0	1887	0	0	1820	0	0	1639	0	1540	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		824			735			329			356	
Travel Time (s)		18.7			16.7			7.5			8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)								0				
Adj. Flow (vph)	33	214	0	0	349	36	25	45	18	28	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	247	0	0	385	0	0	88	0	28	18	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

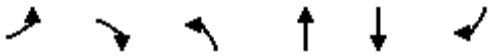
Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	197	0	0	321	33	23	41	17	26	0	17
Future Vol, veh/h	30	197	0	0	321	33	23	41	17	26	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	214	0	0	349	36	25	45	18	28	0	18

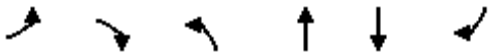
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	385	0	-	-	-	0	656	665	214	679	-	367
Stage 1	-	-	-	-	-	-	280	280	-	367	-	-
Stage 2	-	-	-	-	-	-	376	385	-	312	-	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1173	-	0	0	-	-	379	381	826	366	0	678
Stage 1	-	-	0	0	-	-	727	679	-	653	0	-
Stage 2	-	-	0	0	-	-	645	611	-	699	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1173	-	-	-	-	-	360	369	826	317	-	678
Mov Cap-2 Maneuver	-	-	-	-	-	-	360	369	-	317	-	-
Stage 1	-	-	-	-	-	-	704	657	-	632	-	-
Stage 2	-	-	-	-	-	-	627	611	-	617	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0	16	15.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	414	1173	-	-	-	402
HCM Lane V/C Ratio	0.213	0.028	-	-	-	0.116
HCM Control Delay (s)	16	8.2	0	-	-	15.1
HCM Lane LOS	C	A	A	-	-	C
HCM 95th %tile Q(veh)	0.8	0.1	-	-	-	0.4



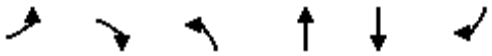
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	32	197	314	58	152	11	
Future Volume (vph)	32	197	314	58	152	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	14	12	12	16	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.884				0.991		
Flt Protected	0.993			0.960			
Satd. Flow (prot)	1744	0	0	2027	2092	0	
Flt Permitted	0.993			0.622			
Satd. Flow (perm)	1744	0	0	1313	2092	0	
Right Turn on Red		No				Yes	
Satd. Flow (RTOR)					5		
Link Speed (mph)	30			30	30		
Link Distance (ft)	735			179	377		
Travel Time (s)	16.7			4.1	8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	35	214	341	63	165	12	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	249	0	0	404	177	0	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	7		8	2 8	2		3
Permitted Phases			2				
Detector Phase	7		8	2 8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0		10.0		1.0
Minimum Split (s)	9.2		9.3		14.9		5.0
Total Split (s)	10.0		15.0		28.0		22.0
Total Split (%)	13.3%		20.0%		37.3%		29%
Maximum Green (s)	5.8		10.7		23.1		18.0
Yellow Time (s)	3.2		3.2		3.2		4.0
All-Red Time (s)	1.0		1.1		1.7		0.0
Lost Time Adjust (s)	0.0				0.0		
Total Lost Time (s)	4.2				4.9		
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Vehicle Extension (s)	1.0		1.0		2.0		3.0
Recall Mode	None		Max		C-Max		None
Act Effct Green (s)	21.6			39.4	23.1		
Actuated g/C Ratio	0.29			0.53	0.31		
v/c Ratio	0.50			0.48	0.27		
Control Delay	27.5			9.7	20.5		
Queue Delay	0.0			23.9	0.0		
Total Delay	27.5			33.7	20.5		
LOS	C			C	C		
Approach Delay	27.5			33.7	20.5		
Approach LOS	C			C	C		
Queue Length 50th (ft)	99			80	60		
Queue Length 95th (ft)	173			121	108		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Internal Link Dist (ft)	655			99	297		
Turn Bay Length (ft)							
Base Capacity (vph)	502			845	647		
Starvation Cap Reductn	0			441	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.50			1.00	0.27		

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 31 (41%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 29.0		Intersection LOS: C	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9: Prospect St & Hillside Pl



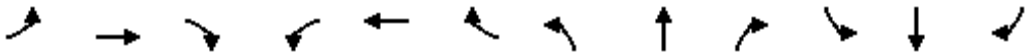
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	197	314	58	152	11
Future Volume (vph)	32	197	314	58	152	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	16	16	12
Total Lost time (s)	4.2			4.9	4.9	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.88			1.00	0.99	
Flt Protected	0.99			0.96	1.00	
Satd. Flow (prot)	1744			2026	2092	
Flt Permitted	0.99			0.62	1.00	
Satd. Flow (perm)	1744			1312	2092	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	214	341	63	165	12
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	249	0	0	404	174	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	7		8	2 8	2	
Permitted Phases			2			
Actuated Green, G (s)	21.6			40.0	23.1	
Effective Green, g (s)	21.6			40.0	23.1	
Actuated g/C Ratio	0.29			0.53	0.31	
Clearance Time (s)	4.2				4.9	
Vehicle Extension (s)	1.0				2.0	
Lane Grp Cap (vph)	502			860	644	
v/s Ratio Prot	c0.14			c0.11	0.08	
v/s Ratio Perm				c0.14		
v/c Ratio	0.50			0.47	0.27	
Uniform Delay, d1	22.2			10.9	19.6	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.3			1.8	1.0	
Delay (s)	22.5			12.7	20.6	
Level of Service	C			B	C	
Approach Delay (s)	22.5			12.7	20.6	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

FUSS & O'NEILL

Appendix B

Intersection Capacity Analysis Worksheets
2026 Combined Traffic Volumes
Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Future Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.902			0.995				
Flt Protected		0.992			0.987						0.985	
Satd. Flow (prot)	0	1721	0	0	1446	0	0	1719	0	0	1782	0
Flt Permitted		0.842			0.787						0.746	
Satd. Flow (perm)	0	1461	0	0	1153	0	0	1719	0	0	1350	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			158			3				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			484			1195			450	
Travel Time (s)		6.8			11.0			27.2			10.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Adj. Flow (vph)	25	105	27	63	0	169	0	331	14	294	655	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	157	0	0	232	0	0	345	0	0	949	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Detector Phase	3	3		3	3			1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	
Minimum Split (s)	10.0	10.0		10.0	10.0			12.0		12.0	12.0	
Total Split (s)	24.0	24.0		24.0	24.0			40.0		40.0	40.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%			50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0			35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag								Lead		Lead	Lead	
Lead-Lag Optimize?								Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2		0.2	0.2	
Recall Mode	None	None		None	None			C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		12.0			12.0			54.8			54.8	
Actuated g/C Ratio		0.15			0.15			0.68			0.68	
v/c Ratio		0.69			0.76			0.29			1.03	
Control Delay		44.0			27.0			8.3			54.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		44.0			27.0			8.3			54.3	
LOS		D			C			A			D	
Approach Delay		44.0			27.0			8.3			54.3	

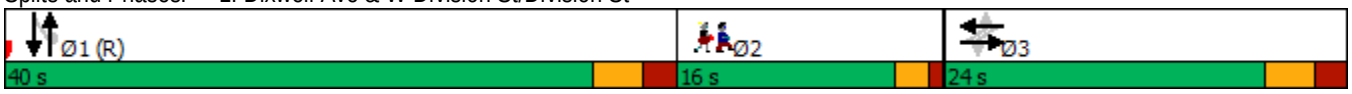
Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	20%
Maximum Green (s)	13.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	7.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			C			A			D	
Queue Length 50th (ft)		70			34			47			349	
Queue Length 95th (ft)		119			103			186			#912	
Internal Link Dist (ft)		220			404			1115			370	
Turn Bay Length (ft)												
Base Capacity (vph)		356			394			1177			924	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.44			0.59			0.29			1.03	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 40.2		Intersection LOS: D	
Intersection Capacity Utilization 101.9%		ICU Level of Service G	
Analysis Period (min) 15			

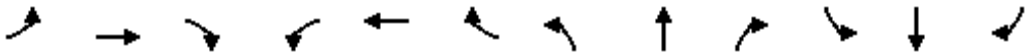
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixwell Ave & W Division St/Division St



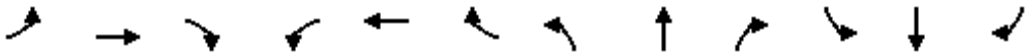
Lane Group	Ø2
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Future Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.90			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.98	
Satd. Flow (prot)		1721			1445			1718			1782	
Flt Permitted		0.84			0.79			1.00			0.75	
Satd. Flow (perm)		1461			1152			1718			1351	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	25	105	27	63	0	169	0	331	14	294	655	0
RTOR Reduction (vph)	0	10	0	0	134	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	147	0	0	98	0	0	344	0	0	949	0
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Actuated Green, G (s)		12.0			12.0			52.4			52.4	
Effective Green, g (s)		12.0			12.0			52.4			52.4	
Actuated g/C Ratio		0.15			0.15			0.65			0.65	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		219			172			1125			884	
v/s Ratio Prot								0.20				
v/s Ratio Perm		c0.10			0.08						c0.70	
v/c Ratio		0.67			0.57			0.31			1.07	
Uniform Delay, d1		32.1			31.6			6.0			13.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.2			2.6			0.7			52.0	
Delay (s)		38.3			34.1			6.7			65.8	
Level of Service		D			C			A			E	
Approach Delay (s)		38.3			34.1			6.7			65.8	
Approach LOS		D			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



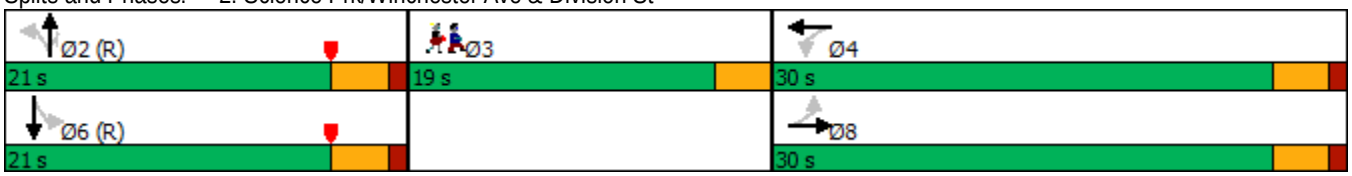
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	117	197	208	117	20	112	43	56	10	84	4
Future Volume (vph)	16	117	197	208	117	20	112	43	56	10	84	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	16	12	12	11	12	12	16	12
Storage Length (ft)	85		0	0		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	65			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.906			0.978				0.850		0.995	
Flt Protected	0.950			0.950				0.965			0.995	
Satd. Flow (prot)	1770	1688	0	1652	2065	0	0	1738	1583	0	2090	0
Flt Permitted	0.662			0.423				0.752			0.976	
Satd. Flow (perm)	1233	1688	0	735	2065	0	0	1354	1583	0	2050	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1609			389			208			307	
Travel Time (s)		36.6			8.8			4.7			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	127	214	226	127	22	122	47	61	11	91	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	341	0	226	149	0	0	169	61	0	106	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Detector Phase	8	8		4	4		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	30.0	30.0		30.0	30.0		21.0	21.0	21.0	21.0	21.0	
Total Split (%)	42.9%	42.9%		42.9%	42.9%		30.0%	30.0%	30.0%	30.0%	30.0%	
Maximum Green (s)	26.0	26.0		26.0	26.0		17.0	17.0	17.0	17.0	17.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	26.2	26.2		26.2	26.2			35.8	35.8		35.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37			0.51	0.51		0.51	
v/c Ratio	0.04	0.54		0.82	0.19			0.24	0.08		0.10	
Control Delay	11.3	19.5		43.2	13.8			12.7	11.4		11.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	21.0
Total Split (s)	19.0
Total Split (%)	27%
Maximum Green (s)	16.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	11.3	19.5		43.2	13.8			12.7	11.4		11.2	
LOS	B	B		D	B			B	B		B	
Approach Delay		19.1			31.5			12.3			11.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	4	106		81	40			41	13		23	
Queue Length 95th (ft)	14	156		#176	66			89	36		55	
Internal Link Dist (ft)		1529			309			128			227	
Turn Bay Length (ft)	85											
Base Capacity (vph)	503	690		300	844			692	809		1048	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.03	0.49		0.75	0.18			0.24	0.08		0.10	

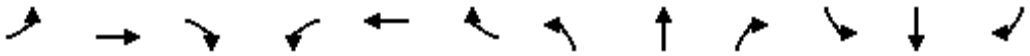
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Science Prk/Winchester Ave & Division St



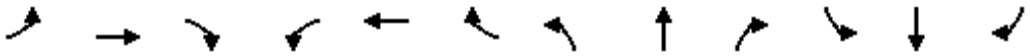
Lane Group	Ø3
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	117	197	208	117	20	112	43	56	10	84	4
Future Volume (vph)	16	117	197	208	117	20	112	43	56	10	84	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	16	12	12	11	12	12	16	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.91		1.00	0.98			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.99	
Satd. Flow (prot)	1770	1687		1652	2064			1738	1583		2090	
Flt Permitted	0.66	1.00		0.42	1.00			0.75	1.00		0.98	
Satd. Flow (perm)	1234	1687		736	2064			1354	1583		2049	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	127	214	226	127	22	122	47	61	11	91	4
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	17	341	0	226	149	0	0	169	61	0	106	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	26.2	26.2		26.2	26.2			35.8	35.8		35.8	
Effective Green, g (s)	26.2	26.2		26.2	26.2			35.8	35.8		35.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37			0.51	0.51		0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	461	631		275	772			692	809		1047	
v/s Ratio Prot		0.20			0.07							
v/s Ratio Perm	0.01			c0.31				c0.12	0.04		0.05	
v/c Ratio	0.04	0.54		0.82	0.19			0.24	0.08		0.10	
Uniform Delay, d1	13.9	17.2		19.8	14.8			9.5	8.7		8.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.5		16.9	0.0			0.8	0.2		0.2	
Delay (s)	13.9	17.7		36.7	14.8			10.4	8.9		9.0	
Level of Service	B	B		D	B			B	A		A	
Approach Delay (s)		17.5			28.0			10.0			9.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	172	27	91	329	0	10	5	59	3	4	7
Future Volume (vph)	1	172	27	91	329	0	10	5	59	3	4	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	175		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980						0.892			0.928	
Flt Protected					0.989			0.993			0.990	
Satd. Flow (prot)	0	3237	0	0	1842	0	0	1650	0	0	1711	0
Flt Permitted					0.989			0.993			0.990	
Satd. Flow (perm)	0	3237	0	0	1842	0	0	1650	0	0	1711	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			460			1056			403	
Travel Time (s)		10.0			10.5			24.0			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	187	29	99	358	0	11	5	64	3	4	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	217	0	0	457	0	0	80	0	0	15	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

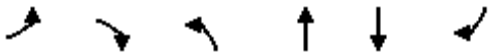
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	172	27	91	329	0	10	5	59	3	4	7
Future Vol, veh/h	1	172	27	91	329	0	10	5	59	3	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	187	29	99	358	0	11	5	64	3	4	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	358	0	0	216	0	0	766	760	108	654	774	358
Stage 1	-	-	-	-	-	-	204	204	-	556	556	-
Stage 2	-	-	-	-	-	-	562	556	-	98	218	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1199	-	-	1352	-	-	306	335	926	366	329	685
Stage 1	-	-	-	-	-	-	779	732	-	515	512	-
Stage 2	-	-	-	-	-	-	511	512	-	898	722	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1199	-	-	1352	-	-	278	304	926	313	299	685
Mov Cap-2 Maneuver	-	-	-	-	-	-	278	304	-	313	299	-
Stage 1	-	-	-	-	-	-	778	731	-	514	465	-
Stage 2	-	-	-	-	-	-	455	465	-	829	721	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.7	11.5	13.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	637	1199	-	-	1352	-	-	422
HCM Lane V/C Ratio	0.126	0.001	-	-	0.073	-	-	0.036
HCM Control Delay (s)	11.5	8	0	-	7.9	0	-	13.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0.1



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	46	208	361	269	77
Future Volume (vph)	11	46	208	361	269	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.970	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1807	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1807	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	346			175	382	
Travel Time (s)	7.9			4.0	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	50	226	392	292	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	50	226	392	376	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.7%		ICU Level of Service A	
Analysis Period (min) 15			

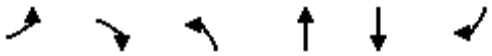
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	46	208	361	269	77
Future Vol, veh/h	11	46	208	361	269	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	50	226	392	292	84

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1178	334	376	0	-	0
Stage 1	334	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	211	708	1182	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	171	708	1182	-	-	-
Mov Cap-2 Maneuver	171	-	-	-	-	-
Stage 1	587	-	-	-	-	-
Stage 2	422	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	3.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1182	-	171	708	-	-
HCM Lane V/C Ratio	0.191	-	0.07	0.071	-	-
HCM Control Delay (s)	8.8	-	27.6	10.5	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.2	0.2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	18	33	822	416	7
Future Volume (vph)	3	18	33	822	416	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	14	12
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		70			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.998	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1635	0	1770	1925	1983	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1635	0	1770	1925	1983	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	223			332	163	
Travel Time (s)	5.1			7.5	3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	20	36	893	452	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	36	893	460	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	33	822	416	7
Future Vol, veh/h	3	18	33	822	416	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	20	36	893	452	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1421	456	460	0	-	0
Stage 1	456	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	150	604	1101	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	604	1101	-	-	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	370	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1101	-	416	-	-
HCM Lane V/C Ratio	0.033	-	0.055	-	-
HCM Control Delay (s)	8.4	-	14.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Future Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	16	12	12	16	12	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.992			0.965			0.998	
Flt Protected		0.996			0.987			0.997			0.997	
Satd. Flow (prot)	0	1708	0	0	1790	0	0	1512	0	0	1819	0
Flt Permitted		0.955			0.730			0.956			0.969	
Satd. Flow (perm)	0	1637	0	0	1324	0	0	1450	0	0	1768	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			4			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		407			477			364			549	
Travel Time (s)		9.3			10.8			8.3			12.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Parking (#/hr)								0				
Adj. Flow (vph)	40	468	54	94	244	20	16	217	81	34	612	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	562	0	0	358	0	0	314	0	0	657	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Detector Phase	4	4		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		12.0	12.0		12.0	12.0	
Total Split (s)	31.0	31.0		31.0	31.0		33.0	33.0		33.0	33.0	
Total Split (%)	38.8%	38.8%		38.8%	38.8%		41.3%	41.3%		41.3%	41.3%	
Maximum Green (s)	26.0	26.0		26.0	26.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag							Lead	Lead		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		0.2	0.2		0.2	0.2	
Recall Mode	Min	Min		Min	Min		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		37.1			37.1			30.7			30.7	
Actuated g/C Ratio		0.46			0.46			0.38			0.38	
v/c Ratio		0.74			0.58			0.55			0.97	
Control Delay		26.0			28.1			22.5			54.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		26.0			28.1			22.5			54.1	

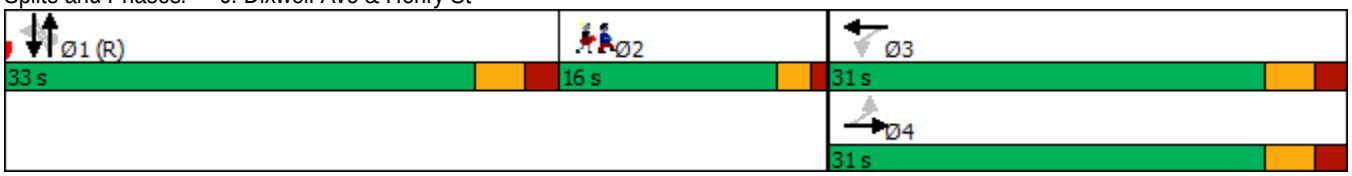
Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Parking (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	20%
Maximum Green (s)	13.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	1.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C			C			C			D	
Approach Delay		26.0			28.1			22.5			54.1	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)		213			154			106			302	
Queue Length 95th (ft)		#447			m214			202			#572	
Internal Link Dist (ft)		327			397			284			469	
Turn Bay Length (ft)												
Base Capacity (vph)		762			615			572			680	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.74			0.58			0.55			0.97	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 35.6		Intersection LOS: D	
Intersection Capacity Utilization 100.5%		ICU Level of Service G	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Dixwell Ave & Henry St

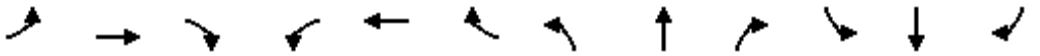


Lane Group	Ø2
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Future Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	16	12	12	16	12	12	16	12
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.97			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1709			1791			1513			1819	
Flt Permitted		0.95			0.73			0.96			0.97	
Satd. Flow (perm)		1637			1324			1450			1768	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	468	54	94	244	20	16	217	81	34	612	11
RTOR Reduction (vph)	0	4	0	0	2	0	0	16	0	0	1	0
Lane Group Flow (vph)	0	558	0	0	356	0	0	298	0	0	656	0
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Parking (#/hr)								0				
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Actuated Green, G (s)		37.1			37.1			28.3			28.3	
Effective Green, g (s)		37.1			37.1			28.3			28.3	
Actuated g/C Ratio		0.46			0.46			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		759			614			512			625	
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.27			0.21			c0.37	
v/c Ratio		0.74			0.58			0.58			1.05	
Uniform Delay, d1		17.5			15.7			21.0			25.9	
Progression Factor		1.00			1.43			1.00			1.00	
Incremental Delay, d2		3.2			0.7			4.8			49.9	
Delay (s)		20.7			23.2			25.8			75.7	
Level of Service		C			C			C			E	
Approach Delay (s)		20.7			23.2			25.8			75.7	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	270	50	24	153	170	35	307	18	25	173	236
Future Volume (vph)	383	270	50	24	153	170	35	307	18	25	173	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	16	12	12	16	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.934			0.993				0.850
Flt Protected	0.950				0.997			0.995			0.994	
Satd. Flow (prot)	1486	1638	0	0	1592	0	0	1690	0	0	1666	1283
Flt Permitted	0.253				0.951			0.907			0.796	
Satd. Flow (perm)	396	1638	0	0	1519	0	0	1540	0	0	1334	1283
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												257
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			824			435			332	
Travel Time (s)		5.3			18.7			9.9			7.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)					0			0				0
Adj. Flow (vph)	416	293	54	26	166	185	38	334	20	27	188	257
Shared Lane Traffic (%)												
Lane Group Flow (vph)	416	347	0	0	377	0	0	392	0	0	215	257
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Detector Phase	3	3 8		4	4		2	2		6	6	3
Switch Phase												
Minimum Initial (s)	6.0			6.0	6.0		10.0	10.0		10.0	10.0	6.0
Minimum Split (s)	9.1			11.0	11.0		15.0	15.0		15.0	15.0	9.1
Total Split (s)	12.0			17.0	17.0		22.0	22.0		22.0	22.0	12.0
Total Split (%)	15.0%			21.3%	21.3%		27.5%	27.5%		27.5%	27.5%	15.0%
Maximum Green (s)	8.9			12.0	12.0		17.0	17.0		17.0	17.0	8.9
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.1			2.0	2.0		2.0	2.0		2.0	2.0	0.1
Lost Time Adjust (s)	0.0				0.0			0.0			0.0	0.0
Total Lost Time (s)	3.1				5.0			5.0			5.0	3.1
Lead/Lag	Lag											Lag
Lead-Lag Optimize?	Yes											Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None			None	None		C-Max	C-Max		C-Max	C-Max	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	51.8	54.9			15.8			17.0			17.0	56.1
Actuated g/C Ratio	0.65	0.69			0.20			0.21			0.21	0.70
v/c Ratio	0.58	0.31			1.26			1.20			0.76	0.26
Control Delay	11.1	6.5			170.8			146.5			48.9	1.4
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	11.1	6.5			170.8			146.5			48.9	1.4
LOS	B	A			F			F			D	A

Lane Group	Ø5	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	5	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	6.0
Minimum Split (s)	29.0	11.0
Total Split (s)	29.0	17.0
Total Split (%)	36%	21%
Maximum Green (s)	25.0	12.0
Yellow Time (s)	4.0	3.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	2.0
Recall Mode	None	None
Walk Time (s)	7.0	
Flash Dont Walk (s)	18.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		

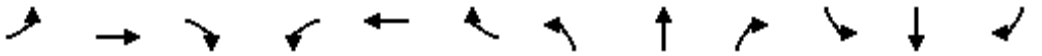
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		9.0			170.8			146.5			23.0	
Approach LOS		A			F			F			C	
Queue Length 50th (ft)	130	95			~221			~241			102	0
Queue Length 95th (ft)	m129	m59			#390			#407			#208	20
Internal Link Dist (ft)		154			744			355			252	
Turn Bay Length (ft)												
Base Capacity (vph)	721	1124			299			327			283	976
Starvation Cap Reductn	0	0			0			0			0	0
Spillback Cap Reductn	0	0			0			0			0	0
Storage Cap Reductn	0	0			0			0			0	0
Reduced v/c Ratio	0.58	0.31			1.26			1.20			0.76	0.26

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 69.6		Intersection LOS: E	
Intersection Capacity Utilization 94.4%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 7: Winchester Ave & Munson St

Lane Group	Ø5	Ø8
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

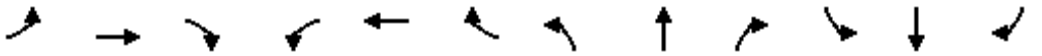
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	270	50	24	153	170	35	307	18	25	173	236
Future Volume (vph)	383	270	50	24	153	170	35	307	18	25	173	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	16	12	12	16	12	12	12	12
Total Lost time (s)	3.1	3.1			5.0			5.0			5.0	3.1
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.98			0.93			0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.99	1.00
Satd. Flow (prot)	1486	1637			1591			1690			1666	1282
Flt Permitted	0.25	1.00			0.95			0.91			0.80	1.00
Satd. Flow (perm)	396	1637			1519			1540			1334	1282
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	416	293	54	26	166	185	38	334	20	27	188	257
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	93
Lane Group Flow (vph)	416	347	0	0	377	0	0	392	0	0	215	164
Parking (#/hr)					0			0				0
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Actuated Green, G (s)	49.9	53.0			15.8			17.0			17.0	51.1
Effective Green, g (s)	49.9	53.0			15.8			17.0			17.0	51.1
Actuated g/C Ratio	0.62	0.66			0.20			0.21			0.21	0.64
Clearance Time (s)	3.1				5.0			5.0			5.0	3.1
Vehicle Extension (s)	2.0				2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	711	1084			300			327			283	818
v/s Ratio Prot	c0.25	0.21										0.09
v/s Ratio Perm	0.12				c0.25			c0.25			0.16	0.04
v/c Ratio	0.59	0.32			1.26			1.20			0.76	0.20
Uniform Delay, d1	9.4	5.8			32.1			31.5			29.6	6.0
Progression Factor	0.84	1.13			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.7	0.1			139.8			115.2			17.3	0.0
Delay (s)	8.7	6.6			171.9			146.7			46.9	6.0
Level of Service	A	A			F			F			D	A
Approach Delay (s)		7.7			171.9			146.7			24.7	
Approach LOS		A			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	69.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.1
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	197	0	0	321	72	23	60	17	75	0	17
Future Volume (vph)	30	197	0	0	321	72	23	60	17	75	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	15	12	12	16	12	11	10	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.975			0.977			0.865	
Flt Protected		0.993						0.989		0.950		
Satd. Flow (prot)	0	1887	0	0	1798	0	0	1652	0	1540	0	0
Flt Permitted		0.993						0.989		0.950		
Satd. Flow (perm)	0	1887	0	0	1798	0	0	1652	0	1540	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		824			735			329			345	
Travel Time (s)		18.7			16.7			7.5			7.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)								0				
Adj. Flow (vph)	33	214	0	0	349	78	25	65	18	82	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	247	0	0	427	0	0	108	0	82	18	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

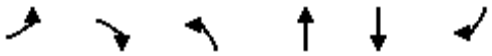
Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	197	0	0	321	72	23	60	17	75	0	17
Future Vol, veh/h	30	197	0	0	321	72	23	60	17	75	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	214	0	0	349	78	25	65	18	82	0	18

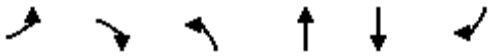
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	427	0	-	-	-	0	677	707	214	710	-	388
Stage 1	-	-	-	-	-	-	280	280	-	388	-	-
Stage 2	-	-	-	-	-	-	397	427	-	322	-	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1132	-	0	0	-	-	367	360	826	348	0	660
Stage 1	-	-	0	0	-	-	727	679	-	636	0	-
Stage 2	-	-	0	0	-	-	629	585	-	690	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1132	-	-	-	-	-	348	348	826	284	-	660
Mov Cap-2 Maneuver	-	-	-	-	-	-	348	348	-	284	-	-
Stage 1	-	-	-	-	-	-	703	657	-	615	-	-
Stage 2	-	-	-	-	-	-	611	585	-	588	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0	17.9	21.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	386	1132	-	-	-	317
HCM Lane V/C Ratio	0.282	0.029	-	-	-	0.315
HCM Control Delay (s)	17.9	8.3	0	-	-	21.5
HCM Lane LOS	C	A	A	-	-	C
HCM 95th %tile Q(veh)	1.1	0.1	-	-	-	1.3



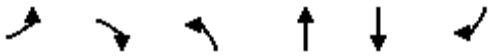
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	32	246	353	58	152	11	
Future Volume (vph)	32	246	353	58	152	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	14	12	12	16	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.881				0.991		
Flt Protected	0.994			0.959			
Satd. Flow (prot)	1740	0	0	2025	2092	0	
Flt Permitted	0.994			0.618			
Satd. Flow (perm)	1740	0	0	1305	2092	0	
Right Turn on Red		No				Yes	
Satd. Flow (RTOR)					5		
Link Speed (mph)	30			30	30		
Link Distance (ft)	735			179	377		
Travel Time (s)	16.7			4.1	8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	35	267	384	63	165	12	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	302	0	0	447	177	0	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	7		8	2 8	2		3
Permitted Phases			2				
Detector Phase	7		8	2 8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0		10.0		1.0
Minimum Split (s)	9.2		9.3		14.9		5.0
Total Split (s)	10.0		15.0		28.0		22.0
Total Split (%)	13.3%		20.0%		37.3%		29%
Maximum Green (s)	5.8		10.7		23.1		18.0
Yellow Time (s)	3.2		3.2		3.2		4.0
All-Red Time (s)	1.0		1.1		1.7		0.0
Lost Time Adjust (s)	0.0				0.0		
Total Lost Time (s)	4.2				4.9		
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Vehicle Extension (s)	1.0		1.0		2.0		3.0
Recall Mode	None		Max		C-Max		None
Act Effct Green (s)	24.3			36.7	23.1		
Actuated g/C Ratio	0.32			0.49	0.31		
v/c Ratio	0.54			0.58	0.27		
Control Delay	26.0			12.8	20.5		
Queue Delay	0.0			48.9	0.0		
Total Delay	26.0			61.6	20.5		
LOS	C			E	C		
Approach Delay	26.0			61.6	20.5		
Approach LOS	C			E	C		
Queue Length 50th (ft)	116			106	60		
Queue Length 95th (ft)	202			150	108		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Internal Link Dist (ft)	655			99	297		
Turn Bay Length (ft)							
Base Capacity (vph)	563			769	647		
Starvation Cap Reductn	0			356	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.54			1.08	0.27		

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 31 (41%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 42.1		Intersection LOS: D	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Prospect St & Hillside Pl



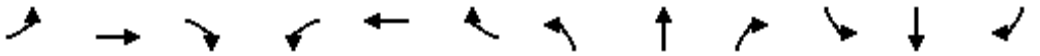
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	246	353	58	152	11
Future Volume (vph)	32	246	353	58	152	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	16	16	12
Total Lost time (s)	4.2			4.9	4.9	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.88			1.00	0.99	
Flt Protected	0.99			0.96	1.00	
Satd. Flow (prot)	1740			2024	2092	
Flt Permitted	0.99			0.62	1.00	
Satd. Flow (perm)	1740			1304	2092	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	267	384	63	165	12
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	302	0	0	447	174	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	7		8	2 8	2	
Permitted Phases			2			
Actuated Green, G (s)	24.3			37.3	23.1	
Effective Green, g (s)	24.3			37.3	23.1	
Actuated g/C Ratio	0.32			0.50	0.31	
Clearance Time (s)	4.2				4.9	
Vehicle Extension (s)	1.0				2.0	
Lane Grp Cap (vph)	563			784	644	
v/s Ratio Prot	c0.17			c0.11	0.08	
v/s Ratio Perm				c0.18		
v/c Ratio	0.54			0.57	0.27	
Uniform Delay, d1	20.7			13.2	19.6	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.5			3.0	1.0	
Delay (s)	21.2			16.2	20.6	
Level of Service	C			B	C	
Approach Delay (s)	21.2			16.2	20.6	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

FUSS & O'NEILL

Appendix B

Intersection Capacity Analysis Worksheets
2026 Improved Signal Optimization Traffic Volumes
Morning Peak Hour

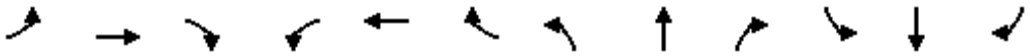


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Future Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.902			0.995				
Flt Protected		0.992			0.987					0.950		
Satd. Flow (prot)	0	1721	0	0	1446	0	0	1719	0	1719	1810	0
Flt Permitted		0.840			0.786					0.552		
Satd. Flow (perm)	0	1457	0	0	1151	0	0	1719	0	999	1810	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			169			5				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			484			1195			450	
Travel Time (s)		6.8			11.0			27.2			10.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Adj. Flow (vph)	25	105	27	63	0	169	0	331	14	294	655	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	157	0	0	232	0	0	345	0	294	655	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Detector Phase	3	3		3	3			1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0		27.0	27.0			23.0		23.0	23.0	
Total Split (s)	28.0	28.0		28.0	28.0			52.0		52.0	52.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%			65.0%		65.0%	65.0%	
Maximum Green (s)	23.0	23.0		23.0	23.0			47.0		47.0	47.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2		0.2	0.2	
Recall Mode	None	None		None	None			C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)		11.9			11.9			58.1		58.1	58.1	
Actuated g/C Ratio		0.15			0.15			0.73		0.73	0.73	
v/c Ratio		0.69			0.74			0.28		0.41	0.50	
Control Delay		44.4			24.3			5.0		7.2	7.1	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		44.4			24.3			5.0		7.2	7.1	
LOS		D			C			A		A	A	
Approach Delay		44.4			24.3			5.0			7.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			C			A			A	
Queue Length 50th (ft)		69			29			46		45	112	
Queue Length 95th (ft)		119			98			106		119	243	
Internal Link Dist (ft)		220			404			1115			370	
Turn Bay Length (ft)												
Base Capacity (vph)		428			451			1249		725	1314	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.37			0.51			0.28		0.41	0.50	

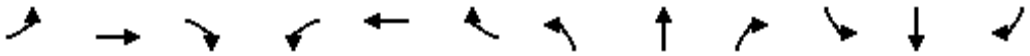
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Dixwell Ave & W Division St/Division St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Future Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.98			0.90			0.99		1.00	1.00	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1721			1445			1718		1719	1810	
Flt Permitted		0.84			0.79			1.00		0.55	1.00	
Satd. Flow (perm)		1457			1151			1718		999	1810	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	25	105	27	63	0	169	0	331	14	294	655	0
RTOR Reduction (vph)	0	11	0	0	144	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	146	0	0	88	0	0	344	0	294	655	0
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Actuated Green, G (s)		11.9			11.9			58.1		58.1	58.1	
Effective Green, g (s)		11.9			11.9			58.1		58.1	58.1	
Actuated g/C Ratio		0.15			0.15			0.73		0.73	0.73	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0			0.2		0.2	0.2	
Lane Grp Cap (vph)		216			171			1247		725	1314	
v/s Ratio Prot								0.20			c0.36	
v/s Ratio Perm		c0.10			0.08					0.29		
v/c Ratio		0.68			0.52			0.28		0.41	0.50	
Uniform Delay, d1		32.2			31.4			3.7		4.2	4.7	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		6.4			1.1			0.5		1.7	1.4	
Delay (s)		38.6			32.5			4.3		5.9	6.1	
Level of Service		D			C			A		A	A	
Approach Delay (s)		38.6			32.5			4.3			6.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

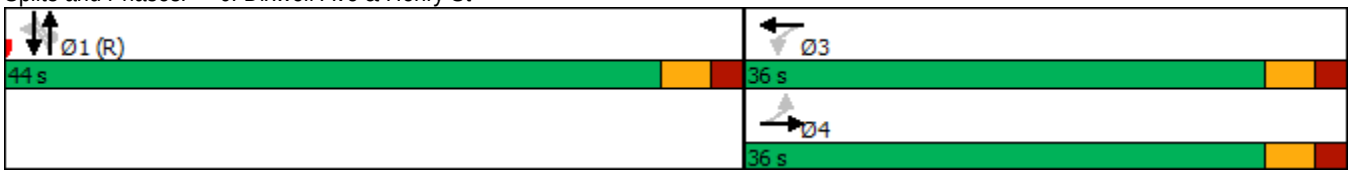


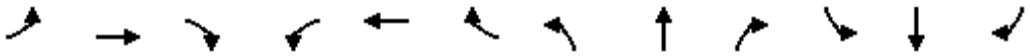
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Future Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	16	12	12	16	12	12	16	12
Storage Length (ft)	50		0	500		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	96			96			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.989			0.965			0.998	
Flt Protected	0.950			0.950				0.997			0.997	
Satd. Flow (prot)	1547	1709	0	1533	1808	0	0	1512	0	0	1819	0
Flt Permitted	0.508			0.187				0.962			0.972	
Satd. Flow (perm)	827	1709	0	302	1808	0	0	1459	0	0	1774	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			6			31			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		407			477			364			549	
Travel Time (s)		9.3			10.8			8.3			12.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Parking (#/hr)								0				
Adj. Flow (vph)	40	468	54	94	244	20	16	217	81	34	612	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	522	0	94	264	0	0	314	0	0	657	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Detector Phase	4	4		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	
Total Split (s)	36.0	36.0		36.0	36.0		44.0	44.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)	31.0	31.0		31.0	31.0		39.0	39.0		39.0	39.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		0.2	0.2		0.2	0.2	
Recall Mode	Min	Min		Min	Min		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	27.4	27.4		27.4	27.4			42.6			42.6	
Actuated g/C Ratio	0.34	0.34		0.34	0.34			0.53			0.53	
v/c Ratio	0.14	0.88		0.91	0.42			0.40			0.70	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.9	42.0		92.7	20.7			12.7			20.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	17.9	42.0		92.7	20.7			12.7			20.0	
LOS	B	D		F	C			B			B	
Approach Delay		40.3			39.6			12.7			20.0	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	13	230		32	77			81			240	
Queue Length 95th (ft)	34	#382		m#112	m140			150			393	
Internal Link Dist (ft)		327			397			284			469	
Turn Bay Length (ft)	50			500								
Base Capacity (vph)	320	667		117	704			791			944	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.13	0.78		0.80	0.38			0.40			0.70	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 28.5		Intersection LOS: C	
Intersection Capacity Utilization 92.5%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

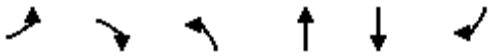
Splits and Phases: 6: Dixwell Ave & Henry St



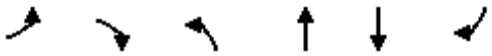


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Future Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	16	12	12	16	12	12	16	12
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.97			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1547	1710		1533	1808			1513			1819	
Flt Permitted	0.51	1.00		0.19	1.00			0.96			0.97	
Satd. Flow (perm)	828	1710		302	1808			1459			1772	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	468	54	94	244	20	16	217	81	34	612	11
RTOR Reduction (vph)	0	5	0	0	4	0	0	14	0	0	0	0
Lane Group Flow (vph)	40	517	0	94	260	0	0	300	0	0	657	0
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Parking (#/hr)								0				
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Actuated Green, G (s)	27.4	27.4		27.4	27.4			42.6			42.6	
Effective Green, g (s)	27.4	27.4		27.4	27.4			42.6			42.6	
Actuated g/C Ratio	0.34	0.34		0.34	0.34			0.53			0.53	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2			0.2	
Lane Grp Cap (vph)	283	585		103	619			776			943	
v/s Ratio Prot		0.30			0.14							
v/s Ratio Perm	0.05			c0.31				0.21			c0.37	
v/c Ratio	0.14	0.88		0.91	0.42			0.39			0.70	
Uniform Delay, d1	18.2	24.8		25.2	20.2			11.0			13.9	
Progression Factor	1.00	1.00		0.94	0.98			1.00			1.00	
Incremental Delay, d2	0.1	14.3		58.4	0.2			1.5			4.2	
Delay (s)	18.3	39.1		81.9	19.9			12.5			18.1	
Level of Service	B	D		F	B			B			B	
Approach Delay (s)		37.7			36.2			12.5			18.1	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



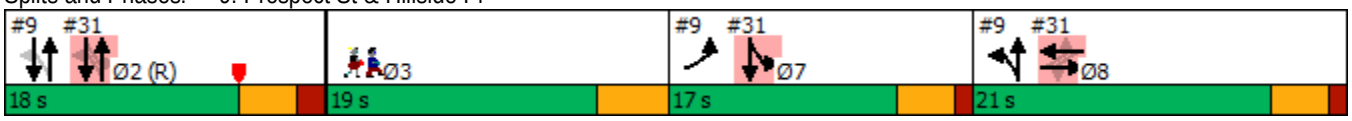
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	32	246	353	58	152	11	
Future Volume (vph)	32	246	353	58	152	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	14	12	12	16	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.881				0.991		
Flt Protected	0.994		0.950				
Satd. Flow (prot)	1740	0	1770	2111	2092	0	
Flt Permitted	0.994		0.554				
Satd. Flow (perm)	1740	0	1032	2111	2092	0	
Right Turn on Red		No				Yes	
Satd. Flow (RTOR)					4		
Link Speed (mph)	30			30	30		
Link Distance (ft)	735			179	377		
Travel Time (s)	16.7			4.1	8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	35	267	384	63	165	12	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	302	0	384	63	177	0	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	7		8	2 8	2		3
Permitted Phases			2				
Detector Phase	7		8	2 8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0		10.0		1.0
Minimum Split (s)	9.2		9.3		14.9		19.0
Total Split (s)	17.0		21.0		18.0		19.0
Total Split (%)	22.7%		28.0%		24.0%		25%
Maximum Green (s)	12.8		16.7		13.1		15.0
Yellow Time (s)	3.2		3.2		3.2		4.0
All-Red Time (s)	1.0		1.1		1.7		0.0
Lost Time Adjust (s)	0.0		0.0		0.0		
Total Lost Time (s)	4.2		4.3		4.9		
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Vehicle Extension (s)	1.0		1.0		2.0		3.0
Recall Mode	None		Max		C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							8.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	19.4		42.8	46.5	13.1		
Actuated g/C Ratio	0.26		0.57	0.62	0.17		
v/c Ratio	0.67		0.44	0.05	0.48		
Control Delay	32.9		9.0	6.2	32.2		
Queue Delay	0.0		5.6	1.1	0.0		
Total Delay	32.9		14.6	7.3	32.2		
LOS	C		B	A	C		
Approach Delay	32.9			13.5	32.2		

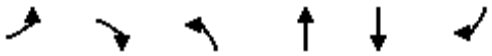


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Approach LOS	C			B	C		
Queue Length 50th (ft)	126		75	10	73		
Queue Length 95th (ft)	200		132	25	132		
Internal Link Dist (ft)	655			99	297		
Turn Bay Length (ft)							
Base Capacity (vph)	450		875	1308	368		
Starvation Cap Reductn	0		422	1100	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.67		0.85	0.30	0.48		

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 23.4		Intersection LOS: C	
Intersection Capacity Utilization 56.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Prospect St & Hillside Pl





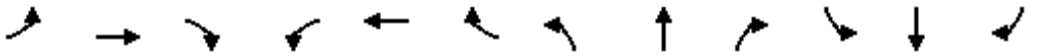
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	246	353	58	152	11
Future Volume (vph)	32	246	353	58	152	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	16	16	12
Total Lost time (s)	4.2		4.3	4.9	4.9	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	0.99	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1740		1770	2111	2092	
Flt Permitted	0.99		0.55	1.00	1.00	
Satd. Flow (perm)	1740		1033	2111	2092	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	267	384	63	165	12
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	302	0	384	63	174	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	7		8	2 8	2	
Permitted Phases			2			
Actuated Green, G (s)	19.4		42.2	46.5	13.1	
Effective Green, g (s)	19.4		42.2	42.2	13.1	
Actuated g/C Ratio	0.26		0.56	0.56	0.17	
Clearance Time (s)	4.2		4.3		4.9	
Vehicle Extension (s)	1.0		1.0		2.0	
Lane Grp Cap (vph)	450		867	1187	365	
v/s Ratio Prot	c0.17		c0.17	0.03	c0.08	
v/s Ratio Perm			0.08			
v/c Ratio	0.67		0.44	0.05	0.48	
Uniform Delay, d1	24.9		9.2	7.4	27.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	3.1		1.6	0.1	4.4	
Delay (s)	28.0		10.8	7.5	32.3	
Level of Service	C		B	A	C	
Approach Delay (s)	28.0			10.4	32.3	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

FUSS & O'NEILL

Appendix B

Intersection Capacity Analysis Worksheets
2026 Improved Roadway Modifications Traffic Volumes
Morning Peak Hour



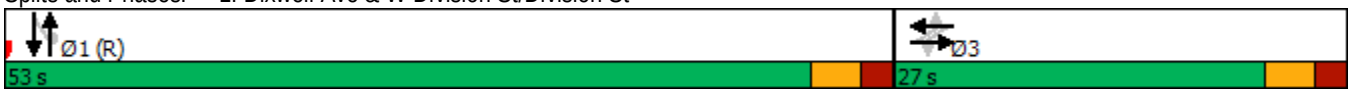
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Future Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.902			0.995				
Flt Protected		0.992			0.987						0.985	
Satd. Flow (prot)	0	1721	0	0	1446	0	0	1719	0	0	1782	0
Flt Permitted		0.840			0.786						0.766	
Satd. Flow (perm)	0	1457	0	0	1151	0	0	1719	0	0	1386	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			167			5				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			484			1195			450	
Travel Time (s)		6.8			11.0			27.2			10.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Adj. Flow (vph)	25	105	27	63	0	169	0	331	14	294	655	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	157	0	0	232	0	0	345	0	0	949	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Detector Phase	3	3		3	3			1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0		27.0	27.0			23.0		23.0	23.0	
Total Split (s)	27.0	27.0		27.0	27.0			53.0		53.0	53.0	
Total Split (%)	33.8%	33.8%		33.8%	33.8%			66.3%		66.3%	66.3%	
Maximum Green (s)	22.0	22.0		22.0	22.0			48.0		48.0	48.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2		0.2	0.2	
Recall Mode	None	None		None	None			C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)		11.9			11.9			58.1			58.1	
Actuated g/C Ratio		0.15			0.15			0.73			0.73	
v/c Ratio		0.69			0.74			0.28			0.94	
Control Delay		44.4			24.9			5.0			31.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		44.4			24.9			5.0			31.3	
LOS		D			C			A			C	
Approach Delay		44.4			24.9			5.0			31.3	

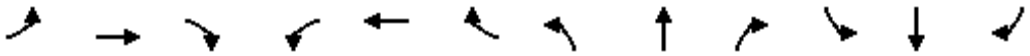
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			C			A			C	
Queue Length 50th (ft)		69			30			46			330	
Queue Length 95th (ft)		119			99			106			#751	
Internal Link Dist (ft)		220			404			1115			370	
Turn Bay Length (ft)												
Base Capacity (vph)		410			437			1249			1006	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.38			0.53			0.28			0.94	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 101.9%		ICU Level of Service G	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

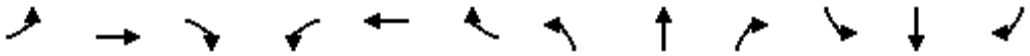
Splits and Phases: 1: Dixwell Ave & W Division St/Division St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Future Volume (vph)	24	102	26	61	0	164	0	321	14	285	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.90			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.98	
Satd. Flow (prot)		1721			1445			1718			1782	
Flt Permitted		0.84			0.79			1.00			0.77	
Satd. Flow (perm)		1457			1151			1718			1387	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	25	105	27	63	0	169	0	331	14	294	655	0
RTOR Reduction (vph)	0	11	0	0	142	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	146	0	0	90	0	0	344	0	0	949	0
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Actuated Green, G (s)		11.9			11.9			58.1			58.1	
Effective Green, g (s)		11.9			11.9			58.1			58.1	
Actuated g/C Ratio		0.15			0.15			0.73			0.73	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		216			171			1247			1007	
v/s Ratio Prot								0.20				
v/s Ratio Perm		c0.10			0.08						c0.68	
v/c Ratio		0.68			0.53			0.28			0.94	
Uniform Delay, d1		32.2			31.4			3.7			9.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.4			1.3			0.5			17.5	
Delay (s)		38.6			32.8			4.3			27.0	
Level of Service		D			C			A			C	
Approach Delay (s)		38.6			32.8			4.3			27.0	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



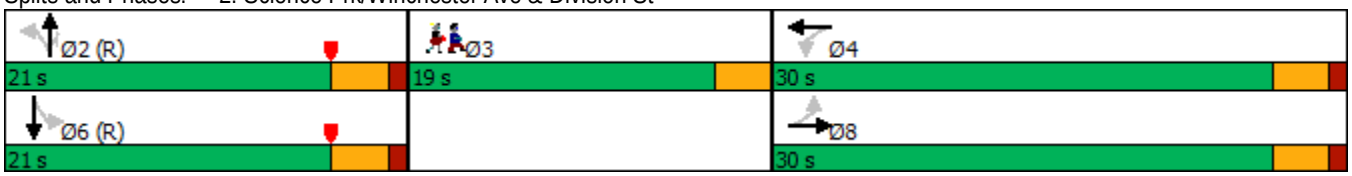
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	117	197	208	117	20	112	43	56	10	84	4
Future Volume (vph)	16	117	197	208	117	20	112	43	56	10	84	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	16	12	12	11	12	12	16	12
Storage Length (ft)	85		0	0		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	65			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.906			0.978				0.850		0.995	
Flt Protected	0.950			0.950				0.965			0.995	
Satd. Flow (prot)	1770	1688	0	1652	2065	0	0	1738	1583	0	2090	0
Flt Permitted	0.662			0.423				0.752			0.976	
Satd. Flow (perm)	1233	1688	0	735	2065	0	0	1354	1583	0	2050	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1609			389			208			307	
Travel Time (s)		36.6			8.8			4.7			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	127	214	226	127	22	122	47	61	11	91	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	341	0	226	149	0	0	169	61	0	106	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Detector Phase	8	8		4	4		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	30.0	30.0		30.0	30.0		21.0	21.0	21.0	21.0	21.0	
Total Split (%)	42.9%	42.9%		42.9%	42.9%		30.0%	30.0%	30.0%	30.0%	30.0%	
Maximum Green (s)	26.0	26.0		26.0	26.0		17.0	17.0	17.0	17.0	17.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	26.2	26.2		26.2	26.2			35.8	35.8		35.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37			0.51	0.51		0.51	
v/c Ratio	0.04	0.54		0.82	0.19			0.24	0.08		0.10	
Control Delay	11.3	19.5		43.2	13.8			12.7	11.4		11.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	21.0
Total Split (s)	19.0
Total Split (%)	27%
Maximum Green (s)	16.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	11.3	19.5		43.2	13.8			12.7	11.4		11.2	
LOS	B	B		D	B			B	B		B	
Approach Delay		19.1			31.5			12.3			11.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	4	106		81	40			41	13		23	
Queue Length 95th (ft)	14	156		#176	66			89	36		55	
Internal Link Dist (ft)		1529			309			128			227	
Turn Bay Length (ft)	85											
Base Capacity (vph)	503	690		300	844			692	809		1048	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.03	0.49		0.75	0.18			0.24	0.08		0.10	

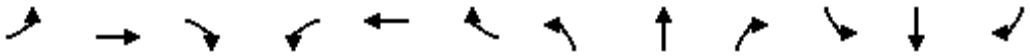
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Science Prk/Winchester Ave & Division St



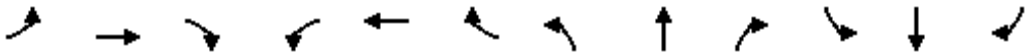
Lane Group	Ø3
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	117	197	208	117	20	112	43	56	10	84	4
Future Volume (vph)	16	117	197	208	117	20	112	43	56	10	84	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	16	12	12	11	12	12	16	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.91		1.00	0.98			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.99	
Satd. Flow (prot)	1770	1687		1652	2064			1738	1583		2090	
Flt Permitted	0.66	1.00		0.42	1.00			0.75	1.00		0.98	
Satd. Flow (perm)	1234	1687		736	2064			1354	1583		2049	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	127	214	226	127	22	122	47	61	11	91	4
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	17	341	0	226	149	0	0	169	61	0	106	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	26.2	26.2		26.2	26.2			35.8	35.8		35.8	
Effective Green, g (s)	26.2	26.2		26.2	26.2			35.8	35.8		35.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37			0.51	0.51		0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	461	631		275	772			692	809		1047	
v/s Ratio Prot		0.20			0.07							
v/s Ratio Perm	0.01			c0.31				c0.12	0.04		0.05	
v/c Ratio	0.04	0.54		0.82	0.19			0.24	0.08		0.10	
Uniform Delay, d1	13.9	17.2		19.8	14.8			9.5	8.7		8.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.5		16.9	0.0			0.8	0.2		0.2	
Delay (s)	13.9	17.7		36.7	14.8			10.4	8.9		9.0	
Level of Service	B	B		D	B			B	A		A	
Approach Delay (s)		17.5			28.0			10.0			9.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	172	27	91	329	0	10	5	59	3	4	7
Future Volume (vph)	1	172	27	91	329	0	10	5	59	3	4	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	175		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980						0.892			0.928	
Flt Protected					0.989			0.993			0.990	
Satd. Flow (prot)	0	3237	0	0	1842	0	0	1650	0	0	1711	0
Flt Permitted					0.989			0.993			0.990	
Satd. Flow (perm)	0	3237	0	0	1842	0	0	1650	0	0	1711	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			460			1056			403	
Travel Time (s)		10.0			10.5			24.0			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	187	29	99	358	0	11	5	64	3	4	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	217	0	0	457	0	0	80	0	0	15	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

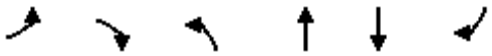
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	172	27	91	329	0	10	5	59	3	4	7
Future Vol, veh/h	1	172	27	91	329	0	10	5	59	3	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	187	29	99	358	0	11	5	64	3	4	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	358	0	0	216	0	0	766	760	108	654	774	358
Stage 1	-	-	-	-	-	-	204	204	-	556	556	-
Stage 2	-	-	-	-	-	-	562	556	-	98	218	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1199	-	-	1352	-	-	306	335	926	366	329	685
Stage 1	-	-	-	-	-	-	779	732	-	515	512	-
Stage 2	-	-	-	-	-	-	511	512	-	898	722	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1199	-	-	1352	-	-	278	304	926	313	299	685
Mov Cap-2 Maneuver	-	-	-	-	-	-	278	304	-	313	299	-
Stage 1	-	-	-	-	-	-	778	731	-	514	465	-
Stage 2	-	-	-	-	-	-	455	465	-	829	721	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.7	11.5	13.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	637	1199	-	-	1352	-	-	422
HCM Lane V/C Ratio	0.126	0.001	-	-	0.073	-	-	0.036
HCM Control Delay (s)	11.5	8	0	-	7.9	0	-	13.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0.1



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	46	208	361	269	77
Future Volume (vph)	11	46	208	361	269	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.970	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1807	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1807	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	346			175	382	
Travel Time (s)	7.9			4.0	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	50	226	392	292	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	50	226	392	376	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.7%		ICU Level of Service A	
Analysis Period (min) 15			

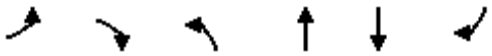
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	46	208	361	269	77
Future Vol, veh/h	11	46	208	361	269	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	50	226	392	292	84

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1178	334	376	0	-	0
Stage 1	334	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	211	708	1182	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	171	708	1182	-	-	-
Mov Cap-2 Maneuver	171	-	-	-	-	-
Stage 1	587	-	-	-	-	-
Stage 2	422	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	3.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1182	-	171	708	-	-
HCM Lane V/C Ratio	0.191	-	0.07	0.071	-	-
HCM Control Delay (s)	8.8	-	27.6	10.5	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.2	0.2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	18	33	822	416	7
Future Volume (vph)	3	18	33	822	416	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	14	12
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		70			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.998	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1635	0	1770	1925	1983	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1635	0	1770	1925	1983	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	223			332	163	
Travel Time (s)	5.1			7.5	3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	20	36	893	452	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	36	893	460	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

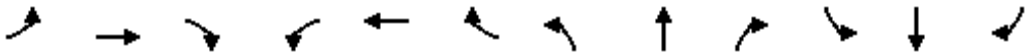
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	33	822	416	7
Future Vol, veh/h	3	18	33	822	416	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	20	36	893	452	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1421	456	460	0	-	0
Stage 1	456	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	150	604	1101	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	604	1101	-	-	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	370	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1101	-	416	-	-
HCM Lane V/C Ratio	0.033	-	0.055	-	-
HCM Control Delay (s)	8.4	-	14.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-



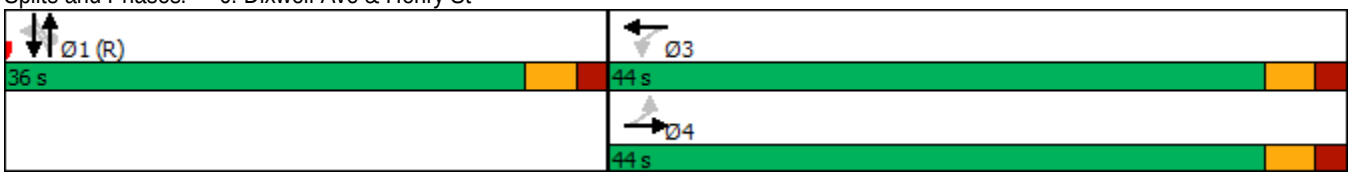
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Future Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	16	12	12	16	12	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.992			0.965			0.998	
Flt Protected		0.996			0.987			0.997			0.997	
Satd. Flow (prot)	0	1708	0	0	1790	0	0	1512	0	0	1819	0
Flt Permitted		0.953			0.671			0.961			0.971	
Satd. Flow (perm)	0	1634	0	0	1217	0	0	1457	0	0	1772	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			5			26			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		407			477			364			549	
Travel Time (s)		9.3			10.8			8.3			12.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Parking (#/hr)								0				
Adj. Flow (vph)	40	468	54	94	244	20	16	217	81	34	612	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	562	0	0	358	0	0	314	0	0	657	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Detector Phase	4	4		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	
Total Split (s)	44.0	44.0		44.0	44.0		36.0	36.0		36.0	36.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	39.0	39.0		39.0	39.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		0.2	0.2		0.2	0.2	
Recall Mode	Min	Min		Min	Min		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		32.1			32.1			37.9			37.9	
Actuated g/C Ratio		0.40			0.40			0.47			0.47	
v/c Ratio		0.85			0.73			0.45			0.78	
Control Delay		33.8			29.5			17.1			28.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		33.8			29.5			17.1			28.4	

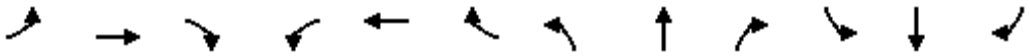
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C			C			B			C	
Approach Delay		33.8			29.5			17.1			28.4	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		238			124			93			270	
Queue Length 95th (ft)		326			m191			187			#535	
Internal Link Dist (ft)		327			397			284			469	
Turn Bay Length (ft)												
Base Capacity (vph)		801			595			703			840	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.70			0.60			0.45			0.78	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 28.3		Intersection LOS: C	
Intersection Capacity Utilization 100.5%		ICU Level of Service G	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

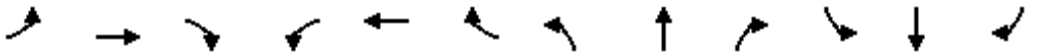
Splits and Phases: 6: Dixwell Ave & Henry St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Future Volume (vph)	37	435	50	87	227	19	15	202	75	32	569	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	16	12	12	16	12	12	16	12
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.97			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1709			1791			1513			1819	
Flt Permitted		0.95			0.67			0.96			0.97	
Satd. Flow (perm)		1635			1218			1458			1771	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	468	54	94	244	20	16	217	81	34	612	11
RTOR Reduction (vph)	0	5	0	0	3	0	0	14	0	0	1	0
Lane Group Flow (vph)	0	557	0	0	355	0	0	300	0	0	656	0
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Parking (#/hr)								0				
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Actuated Green, G (s)		32.1			32.1			37.9			37.9	
Effective Green, g (s)		32.1			32.1			37.9			37.9	
Actuated g/C Ratio		0.40			0.40			0.47			0.47	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		656			488			690			839	
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.29			0.21			c0.37	
v/c Ratio		0.85			0.73			0.44			0.78	
Uniform Delay, d1		21.7			20.3			14.0			17.6	
Progression Factor		1.00			1.08			1.00			1.00	
Incremental Delay, d2		9.6			4.3			2.0			7.2	
Delay (s)		31.3			26.2			15.9			24.8	
Level of Service		C			C			B			C	
Approach Delay (s)		31.3			26.2			15.9			24.8	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	270	50	24	153	170	35	307	18	25	173	236
Future Volume (vph)	383	270	50	24	153	170	35	307	18	25	173	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	16	12	12	16	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.934			0.993				0.850
Flt Protected	0.950				0.997			0.995			0.994	
Satd. Flow (prot)	1486	1638	0	0	1592	0	0	1690	0	0	1666	1283
Flt Permitted	0.354				0.958			0.953			0.929	
Satd. Flow (perm)	554	1638	0	0	1530	0	0	1618	0	0	1557	1283
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												257
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			824			435			332	
Travel Time (s)		5.3			18.7			9.9			7.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)					0			0				0
Adj. Flow (vph)	416	293	54	26	166	185	38	334	20	27	188	257
Shared Lane Traffic (%)												
Lane Group Flow (vph)	416	347	0	0	377	0	0	392	0	0	215	257
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Detector Phase	3	3 8		4	4		2	2		6	6	3
Switch Phase												
Minimum Initial (s)	6.0			6.0	6.0		10.0	10.0		10.0	10.0	6.0
Minimum Split (s)	9.1			33.0	33.0		27.0	27.0		27.0	27.0	9.1
Total Split (s)	18.0			33.0	33.0		29.0	29.0		29.0	29.0	18.0
Total Split (%)	22.5%			41.3%	41.3%		36.3%	36.3%		36.3%	36.3%	22.5%
Maximum Green (s)	14.9			28.0	28.0		24.0	24.0		24.0	24.0	14.9
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.1			2.0	2.0		2.0	2.0		2.0	2.0	0.1
Lost Time Adjust (s)	0.0				0.0			0.0			0.0	0.0
Total Lost Time (s)	3.1				5.0			5.0			5.0	3.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None			None	None		C-Max	C-Max		C-Max	C-Max	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)				21.0	21.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effct Green (s)	40.0	43.1			23.2			28.8			28.8	48.7
Actuated g/C Ratio	0.50	0.54			0.29			0.36			0.36	0.61
v/c Ratio	0.92	0.39			0.85			0.67			0.38	0.29
Control Delay	40.5	10.2			44.7			30.8			23.2	2.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	40.5	10.2			44.7			30.8			23.2	2.2
LOS	D	B			D			C			C	A

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Parking (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	41%
Maximum Green (s)	28.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	

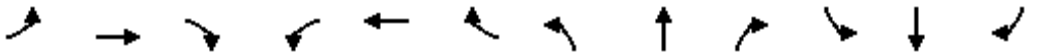
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.7			44.7			30.8			11.8	
Approach LOS		C			D			C			B	
Queue Length 50th (ft)	155	104			173			166			80	0
Queue Length 95th (ft)	m#233	m135			261			#324			151	31
Internal Link Dist (ft)		154			744			355			252	
Turn Bay Length (ft)												
Base Capacity (vph)	450	980			535			583			561	881
Starvation Cap Reductn	0	0			0			0			0	0
Spillback Cap Reductn	0	0			0			0			0	0
Storage Cap Reductn	0	0			0			0			0	0
Reduced v/c Ratio	0.92	0.35			0.70			0.67			0.38	0.29

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 27.4		Intersection LOS: C	
Intersection Capacity Utilization 94.4%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 7: Winchester Ave & Munson St

Lane Group	Ø8
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

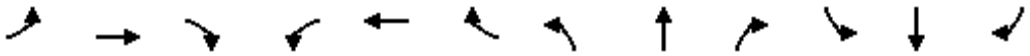
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	270	50	24	153	170	35	307	18	25	173	236
Future Volume (vph)	383	270	50	24	153	170	35	307	18	25	173	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	16	12	12	16	12	12	12	12
Total Lost time (s)	3.1	3.1			5.0			5.0			5.0	3.1
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.98			0.93			0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.99	1.00
Satd. Flow (prot)	1486	1637			1591			1690			1666	1282
Flt Permitted	0.35	1.00			0.96			0.95			0.93	1.00
Satd. Flow (perm)	554	1637			1529			1619			1558	1282
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	416	293	54	26	166	185	38	334	20	27	188	257
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	117
Lane Group Flow (vph)	416	347	0	0	377	0	0	392	0	0	215	140
Parking (#/hr)					0			0				0
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Actuated Green, G (s)	38.1	41.2			23.2			28.8			28.8	43.7
Effective Green, g (s)	38.1	41.2			23.2			28.8			28.8	43.7
Actuated g/C Ratio	0.48	0.52			0.29			0.36			0.36	0.55
Clearance Time (s)	3.1				5.0			5.0			5.0	3.1
Vehicle Extension (s)	2.0				2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	437	843			443			582			560	700
v/s Ratio Prot	c0.18	0.21										0.04
v/s Ratio Perm	c0.28				0.25			c0.24			0.14	0.07
v/c Ratio	0.95	0.41			0.85			0.67			0.38	0.20
Uniform Delay, d1	17.6	11.9			26.8			21.6			19.0	9.2
Progression Factor	0.99	0.87			1.00			1.00			1.00	1.00
Incremental Delay, d2	29.4	0.1			14.0			6.1			2.0	0.1
Delay (s)	46.9	10.5			40.8			27.8			21.0	9.3
Level of Service	D	B			D			C			C	A
Approach Delay (s)		30.3			40.8			27.8			14.6	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.1
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	197	0	0	321	72	23	60	17	75	0	17
Future Volume (vph)	30	197	0	0	321	72	23	60	17	75	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	15	12	12	16	12	11	10	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.975			0.977			0.865	
Flt Protected		0.993						0.989		0.950		
Satd. Flow (prot)	0	1887	0	0	1798	0	0	1652	0	1540	0	0
Flt Permitted		0.993						0.989		0.950		
Satd. Flow (perm)	0	1887	0	0	1798	0	0	1652	0	1540	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		824			735			329			345	
Travel Time (s)		18.7			16.7			7.5			7.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)								0				
Adj. Flow (vph)	33	214	0	0	349	78	25	65	18	82	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	247	0	0	427	0	0	108	0	82	18	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

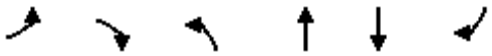
Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	197	0	0	321	72	23	60	17	75	0	17
Future Vol, veh/h	30	197	0	0	321	72	23	60	17	75	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	214	0	0	349	78	25	65	18	82	0	18

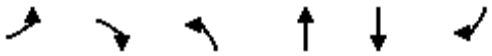
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	427	0	-	-	-	0	677	707	214	710	-	388
Stage 1	-	-	-	-	-	-	280	280	-	388	-	-
Stage 2	-	-	-	-	-	-	397	427	-	322	-	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1132	-	0	0	-	-	367	360	826	348	0	660
Stage 1	-	-	0	0	-	-	727	679	-	636	0	-
Stage 2	-	-	0	0	-	-	629	585	-	690	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1132	-	-	-	-	-	348	348	826	284	-	660
Mov Cap-2 Maneuver	-	-	-	-	-	-	348	348	-	284	-	-
Stage 1	-	-	-	-	-	-	703	657	-	615	-	-
Stage 2	-	-	-	-	-	-	611	585	-	588	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0	17.9	21.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	386	1132	-	-	-	317
HCM Lane V/C Ratio	0.282	0.029	-	-	-	0.315
HCM Control Delay (s)	17.9	8.3	0	-	-	21.5
HCM Lane LOS	C	A	A	-	-	C
HCM 95th %tile Q(veh)	1.1	0.1	-	-	-	1.3



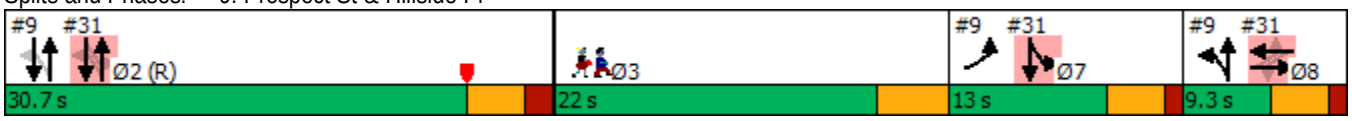
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	32	246	353	58	152	11	
Future Volume (vph)	32	246	353	58	152	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	14	12	12	16	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.881				0.991		
Flt Protected	0.994			0.959			
Satd. Flow (prot)	1740	0	0	2025	2092	0	
Flt Permitted	0.994			0.627			
Satd. Flow (perm)	1740	0	0	1324	2092	0	
Right Turn on Red		No				Yes	
Satd. Flow (RTOR)					5		
Link Speed (mph)	30			30	30		
Link Distance (ft)	735			179	377		
Travel Time (s)	16.7			4.1	8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	35	267	384	63	165	12	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	302	0	0	447	177	0	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	7		8	2 8	2		3
Permitted Phases			2				
Detector Phase	7		8	2 8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0		10.0		1.0
Minimum Split (s)	9.2		9.3		14.9		22.0
Total Split (s)	13.0		9.3		30.7		22.0
Total Split (%)	17.3%		12.4%		40.9%		29%
Maximum Green (s)	8.8		5.0		25.8		18.0
Yellow Time (s)	3.2		3.2		3.2		4.0
All-Red Time (s)	1.0		1.1		1.7		0.0
Lost Time Adjust (s)	0.0				0.0		
Total Lost Time (s)	4.2				4.9		
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Vehicle Extension (s)	1.0		1.0		2.0		3.0
Recall Mode	None		Max		C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							8.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	23.7			37.3	25.8		
Actuated g/C Ratio	0.32			0.50	0.34		
v/c Ratio	0.55			0.58	0.25		
Control Delay	27.0			12.5	18.3		
Queue Delay	0.0			55.7	0.0		
Total Delay	27.0			68.2	18.3		
LOS	C			E	B		
Approach Delay	27.0			68.2	18.3		

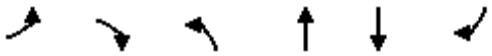


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Approach LOS	C			E	B		
Queue Length 50th (ft)	121			98	56		
Queue Length 95th (ft)	202			150	101		
Internal Link Dist (ft)	655			99	297		
Turn Bay Length (ft)							
Base Capacity (vph)	549			766	722		
Starvation Cap Reductn	0			361	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.55			1.10	0.25		

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 31 (41%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 45.2		Intersection LOS: D	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Prospect St & Hillside Pl





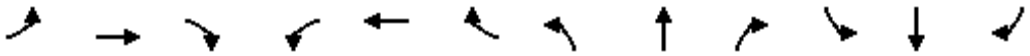
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	246	353	58	152	11
Future Volume (vph)	32	246	353	58	152	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	16	16	12
Total Lost time (s)	4.2			4.9	4.9	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.88			1.00	0.99	
Flt Protected	0.99			0.96	1.00	
Satd. Flow (prot)	1740			2024	2092	
Flt Permitted	0.99			0.63	1.00	
Satd. Flow (perm)	1740			1324	2092	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	267	384	63	165	12
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	302	0	0	447	174	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	7		8	2 8	2	
Permitted Phases			2			
Actuated Green, G (s)	23.7			37.9	25.8	
Effective Green, g (s)	23.7			37.9	25.8	
Actuated g/C Ratio	0.32			0.51	0.34	
Clearance Time (s)	4.2				4.9	
Vehicle Extension (s)	1.0				2.0	
Lane Grp Cap (vph)	549			781	719	
v/s Ratio Prot	c0.17			c0.09	0.08	
v/s Ratio Perm				c0.20		
v/c Ratio	0.55			0.57	0.24	
Uniform Delay, d1	21.2			12.9	17.6	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.7			3.0	0.8	
Delay (s)	21.9			15.9	18.4	
Level of Service	C			B	B	
Approach Delay (s)	21.9			15.9	18.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

FUSS & O'NEILL

Appendix C

Intersection Capacity Analysis Worksheets
2026 Background Traffic Volumes
Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	71	37	82	0	206	0	668	16	88	586	0
Future Volume (vph)	23	71	37	82	0	206	0	668	16	88	586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.904			0.997				
Flt Protected		0.991			0.986						0.993	
Satd. Flow (prot)	0	1693	0	0	1447	0	0	1722	0	0	1797	0
Flt Permitted		0.836			0.838						0.737	
Satd. Flow (perm)	0	1428	0	0	1230	0	0	1722	0	0	1334	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			147			2				
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		300			484			1195			450	
Travel Time (s)		8.2			13.2			32.6			12.3	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Adj. Flow (vph)	24	73	38	85	0	212	0	689	16	91	604	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	297	0	0	705	0	0	695	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Detector Phase	3	3		3	3			1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	
Minimum Split (s)	10.0	10.0		10.0	10.0			12.0		12.0	12.0	
Total Split (s)	24.0	24.0		24.0	24.0			40.0		40.0	40.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%			50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0			35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag								Lead		Lead	Lead	
Lead-Lag Optimize?								Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2		0.2	0.2	
Recall Mode	None	None		None	None			C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		14.5			14.5			52.3			52.3	
Actuated g/C Ratio		0.18			0.18			0.65			0.65	
v/c Ratio		0.49			0.87			0.63			0.80	
Control Delay		28.7			40.1			15.4			23.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		28.7			40.1			15.4			23.3	
LOS		C			D			B			C	
Approach Delay		28.7			40.1			15.4			23.3	

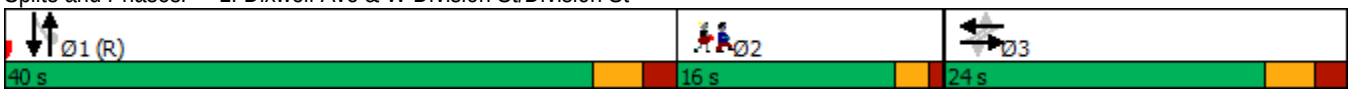
Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	20%
Maximum Green (s)	13.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	7.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			B			C	
Queue Length 50th (ft)		49			72			164			200	
Queue Length 95th (ft)		97			#188			#553			#629	
Internal Link Dist (ft)		220			404			1115			370	
Turn Bay Length (ft)												
Base Capacity (vph)		362			409			1126			872	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.37			0.73			0.63			0.80	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 23.4		Intersection LOS: C	
Intersection Capacity Utilization 108.2%		ICU Level of Service G	
Analysis Period (min) 15			

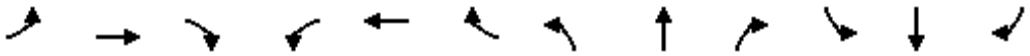
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixwell Ave & W Division St/Division St



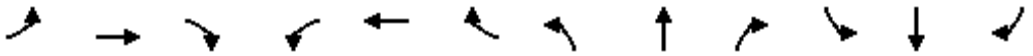
Lane Group	Ø2
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	71	37	82	0	206	0	668	16	88	586	0
Future Volume (vph)	23	71	37	82	0	206	0	668	16	88	586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.90			1.00			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		1693			1447			1722			1798	
Flt Permitted		0.84			0.84			1.00			0.74	
Satd. Flow (perm)		1429			1230			1722			1334	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	24	73	38	85	0	212	0	689	16	91	604	0
RTOR Reduction (vph)	0	19	0	0	120	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	116	0	0	177	0	0	704	0	0	695	0
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Actuated Green, G (s)		14.5			14.5			49.9			49.9	
Effective Green, g (s)		14.5			14.5			49.9			49.9	
Actuated g/C Ratio		0.18			0.18			0.62			0.62	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		259			222			1074			832	
v/s Ratio Prot								0.41				
v/s Ratio Perm		0.08			c0.14						c0.52	
v/c Ratio		0.45			0.80			0.66			0.84	
Uniform Delay, d1		29.2			31.3			9.6			11.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			16.6			3.1			9.7	
Delay (s)		29.6			47.9			12.7			21.5	
Level of Service		C			D			B			C	
Approach Delay (s)		29.6			47.9			12.7			21.5	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



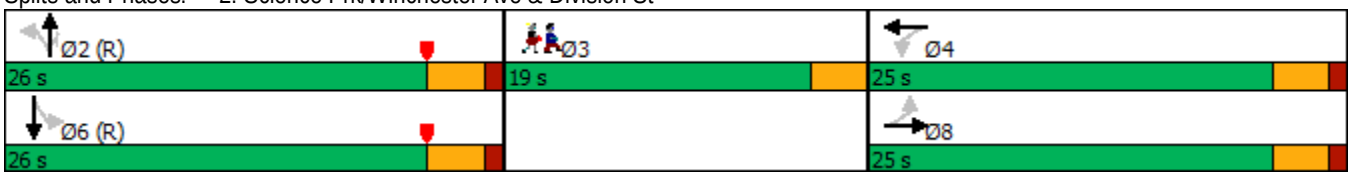
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	184	106	92	69	41	117	158	253	34	69	10
Future Volume (vph)	52	184	106	92	69	41	117	158	253	34	69	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	16	12	12	11	12	12	16	12
Storage Length (ft)	85		0	0		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	65			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.945			0.944				0.850		0.988	
Flt Protected	0.950			0.950				0.979			0.985	
Satd. Flow (prot)	1770	1760	0	1652	1993	0	0	1763	1583	0	2054	0
Flt Permitted	0.680			0.322				0.831			0.876	
Satd. Flow (perm)	1267	1760	0	560	1993	0	0	1496	1583	0	1827	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1609			389			208			307	
Travel Time (s)		36.6			8.8			4.7			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	200	115	100	75	45	127	172	275	37	75	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	315	0	100	120	0	0	299	275	0	123	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Detector Phase	8	8		4	4		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	25.0	25.0		25.0	25.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		37.1%	37.1%	37.1%	37.1%	37.1%	
Maximum Green (s)	21.0	21.0		21.0	21.0		22.0	22.0	22.0	22.0	22.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	16.8	16.8		16.8	16.8			45.2	45.2		45.2	
Actuated g/C Ratio	0.24	0.24		0.24	0.24			0.65	0.65		0.65	
v/c Ratio	0.19	0.75		0.75	0.25			0.31	0.27		0.10	
Control Delay	20.6	35.2		55.4	21.2			7.6	7.2		6.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	21.0
Total Split (s)	19.0
Total Split (%)	27%
Maximum Green (s)	16.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	20.6	35.2		55.4	21.2			7.6	7.2		6.2	
LOS	C	D		E	C			A	A		A	
Approach Delay		33.0			36.8			7.4			6.2	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)	20	126		40	42			49	44		17	
Queue Length 95th (ft)	41	182		#94	71			114	102		46	
Internal Link Dist (ft)		1529			309			128			227	
Turn Bay Length (ft)	85											
Base Capacity (vph)	388	539		172	610			965	1021		1179	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.15	0.58		0.58	0.20			0.31	0.27		0.10	

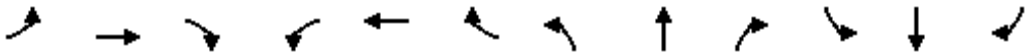
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 66 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 19.7		Intersection LOS: B	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Science Prk/Winchester Ave & Division St



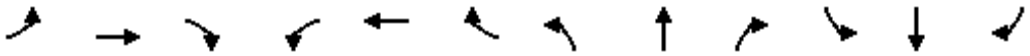
Lane Group	Ø3
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	184	106	92	69	41	117	158	253	34	69	10
Future Volume (vph)	52	184	106	92	69	41	117	158	253	34	69	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	16	12	12	11	12	12	16	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.95		1.00	0.94			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.99	
Satd. Flow (prot)	1770	1761		1652	1992			1763	1583		2055	
Flt Permitted	0.68	1.00		0.32	1.00			0.83	1.00		0.88	
Satd. Flow (perm)	1266	1761		560	1992			1497	1583		1827	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	200	115	100	75	45	127	172	275	37	75	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	57	315	0	100	120	0	0	299	275	0	123	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	16.8	16.8		16.8	16.8			45.2	45.2		45.2	
Effective Green, g (s)	16.8	16.8		16.8	16.8			45.2	45.2		45.2	
Actuated g/C Ratio	0.24	0.24		0.24	0.24			0.65	0.65		0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	303	422		134	478			966	1022		1179	
v/s Ratio Prot		c0.18			0.06							
v/s Ratio Perm	0.05			0.18				c0.20	0.17		0.07	
v/c Ratio	0.19	0.75		0.75	0.25			0.31	0.27		0.10	
Uniform Delay, d1	21.2	24.6		24.6	21.5			5.5	5.3		4.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	6.2		17.8	0.1			0.8	0.6		0.2	
Delay (s)	21.3	30.8		42.4	21.6			6.3	6.0		4.9	
Level of Service	C	C		D	C			A	A		A	
Approach Delay (s)		29.4			31.1			6.2			4.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	439	12	16	208	1	9	29	60	0	5	5
Future Volume (vph)	13	439	12	16	208	1	9	29	60	0	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	12	12	12	12	12	12	12	12
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.999			0.918			0.932	
Flt Protected		0.999			0.997			0.995				
Satd. Flow (prot)	0	3287	0	0	1855	0	0	1701	0	0	1736	0
Flt Permitted		0.999			0.997			0.995				
Satd. Flow (perm)	0	3287	0	0	1855	0	0	1701	0	0	1736	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			460			1047			403	
Travel Time (s)		10.0			10.5			23.8			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	477	13	17	226	1	10	32	65	0	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	504	0	0	244	0	0	107	0	0	10	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.2%		ICU Level of Service A	
Analysis Period (min) 15			

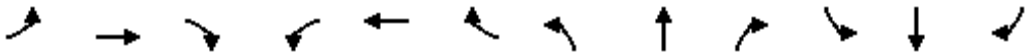
Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	439	12	16	208	1	9	29	60	0	5	5
Future Vol, veh/h	13	439	12	16	208	1	9	29	60	0	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	477	13	17	226	1	10	32	65	0	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	227	0	0	490	0	0	778	773	245	544	779	227
Stage 1	-	-	-	-	-	-	512	512	-	261	261	-
Stage 2	-	-	-	-	-	-	266	261	-	283	518	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1340	-	-	1071	-	-	300	329	756	436	326	812
Stage 1	-	-	-	-	-	-	514	536	-	743	692	-
Stage 2	-	-	-	-	-	-	739	692	-	701	532	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1340	-	-	1071	-	-	287	318	756	359	316	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	287	318	-	359	316	-
Stage 1	-	-	-	-	-	-	507	528	-	733	680	-
Stage 2	-	-	-	-	-	-	715	680	-	594	525	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.6	14.5	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	485	1340	-	-	1071	-	-	455
HCM Lane V/C Ratio	0.22	0.011	-	-	0.016	-	-	0.024
HCM Control Delay (s)	14.5	7.7	0.1	-	8.4	0	-	13.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	0	248	192	0	105	62	296	71	40	310	11
Future Volume (vph)	125	0	248	192	0	105	62	296	71	40	310	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10	12	12	12	12	12	12
Storage Length (ft)	0		0	0		70	100		0	165		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.971			0.995	
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1770	1583	0	1770	1478	1770	1809	0	1770	1853	0
Flt Permitted		0.950			0.950		0.950			0.950		
Satd. Flow (perm)	0	1770	1583	0	1770	1478	1770	1809	0	1770	1853	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		346			188			338			639	
Travel Time (s)		7.9			4.3			7.7			14.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	0	270	209	0	114	67	322	77	43	337	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	136	270	0	209	114	67	399	0	43	349	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	69.6

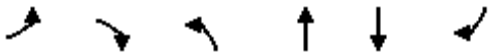
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	0	248	192	0	105	62	296	71	40	310	11
Future Vol, veh/h	125	0	248	192	0	105	62	296	71	40	310	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	70	100	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	0	270	209	0	114	67	322	77	43	337	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	981	962	343	1059	930	361	349	0	0	399	0	0
Stage 1	429	429	-	495	495	-	-	-	-	-	-	-
Stage 2	552	533	-	564	435	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	229	256	700	~ 202	267	684	1210	-	-	1160	-	-
Stage 1	604	584	-	556	546	-	-	-	-	-	-	-
Stage 2	518	525	-	510	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	178	233	700	~ 116	243	684	1210	-	-	1160	-	-
Mov Cap-2 Maneuver	178	233	-	~ 116	243	-	-	-	-	-	-	-
Stage 1	571	562	-	525	516	-	-	-	-	-	-	-
Stage 2	408	496	-	302	559	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.6	298.5	1.2	0.9
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1210	-	-	178	700	116	684	1160	-	-
HCM Lane V/C Ratio	0.056	-	-	0.763	0.385	1.799	0.167	0.037	-	-
HCM Control Delay (s)	8.2	-	-	70.9	13.3	$ 455.5	11.3	8.2	-	-
HCM Lane LOS	A	-	-	F	B	F	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	5	1.8	16.4	0.6	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	38	10	421	749	2
Future Volume (vph)	9	38	10	421	749	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	14	12
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		70			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.891					
Flt Protected	0.990		0.950			
Satd. Flow (prot)	1643	0	1770	1925	1987	0
Flt Permitted	0.990		0.950			
Satd. Flow (perm)	1643	0	1770	1925	1987	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	223			332	338	
Travel Time (s)	5.1			7.5	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	41	11	458	814	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	0	11	458	816	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

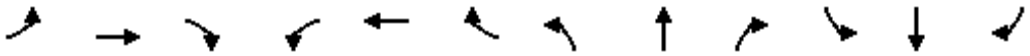
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	38	10	421	749	2
Future Vol, veh/h	9	38	10	421	749	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	41	11	458	814	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1295	815	816	0	-	0
Stage 1	815	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	179	377	812	-	-	-
Stage 1	435	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	176	377	812	-	-	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	622	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	812	-	309	-	-
HCM Lane V/C Ratio	0.013	-	0.165	-	-
HCM Control Delay (s)	9.5	-	18.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-



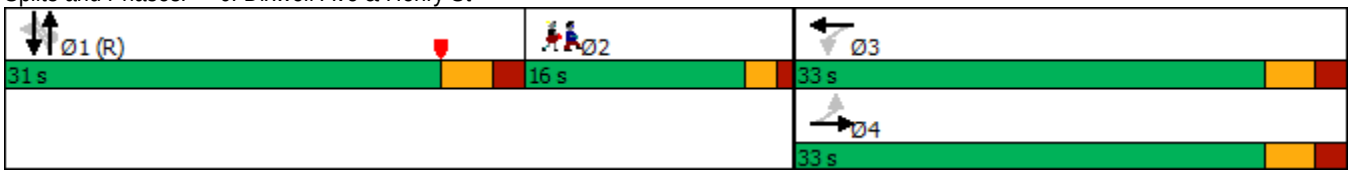
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	470	56	77	588	29	35	384	53	61	563	28
Future Volume (vph)	83	470	56	77	588	29	35	384	53	61	563	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	16	12	12	16	12	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.994			0.985			0.994	
Flt Protected		0.993			0.994			0.996			0.995	
Satd. Flow (prot)	0	1704	0	0	1806	0	0	1713	0	0	1808	0
Flt Permitted		0.816			0.871			0.802			0.794	
Satd. Flow (perm)	0	1400	0	0	1583	0	0	1379	0	0	1443	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			3			8			3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		407			477			364			549	
Travel Time (s)		9.3			10.8			8.3			12.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Adj. Flow (vph)	89	505	60	83	632	31	38	413	57	66	605	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	654	0	0	746	0	0	508	0	0	701	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Detector Phase	4	4		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		12.0	12.0		12.0	12.0	
Total Split (s)	33.0	33.0		33.0	33.0		31.0	31.0		31.0	31.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		38.8%	38.8%		38.8%	38.8%	
Maximum Green (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag							Lead	Lead		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		0.2	0.2		0.2	0.2	
Recall Mode	Min	Min		Min	Min		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		41.8			41.8			26.0			26.0	
Actuated g/C Ratio		0.52			0.52			0.32			0.32	
v/c Ratio		0.89			0.90			1.12			1.49	
Control Delay		35.4			31.5			108.0			256.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		35.4			31.5			108.0			256.2	
LOS		D			C			F			F	

Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	20%
Maximum Green (s)	13.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	1.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		35.4			31.5			108.0			256.2	
Approach LOS		D			C			F			F	
Queue Length 50th (ft)		253			252			~296			~497	
Queue Length 95th (ft)		#587			m#540			#483			#706	
Internal Link Dist (ft)		327			397			284			469	
Turn Bay Length (ft)												
Base Capacity (vph)		735			828			453			471	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.89			0.90			1.12			1.49	

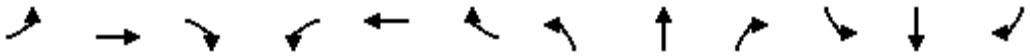
Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 26 (33%), Referenced to phase 1:NBSB, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.49			
Intersection Signal Delay: 107.8		Intersection LOS: F	
Intersection Capacity Utilization 113.8%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Dixwell Ave & Henry St



Lane Group	Ø2
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

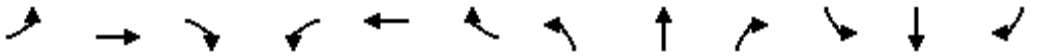
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	470	56	77	588	29	35	384	53	61	563	28
Future Volume (vph)	83	470	56	77	588	29	35	384	53	61	563	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	16	12	12	16	12	12	16	12
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.98			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1704			1808			1713			1809	
Flt Permitted		0.82			0.87			0.80			0.79	
Satd. Flow (perm)		1400			1583			1380			1442	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	89	505	60	83	632	31	38	413	57	66	605	30
RTOR Reduction (vph)	0	3	0	0	1	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	651	0	0	745	0	0	502	0	0	699	0
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Actuated Green, G (s)		41.8			41.8			23.6			23.6	
Effective Green, g (s)		41.8			41.8			23.6			23.6	
Actuated g/C Ratio		0.52			0.52			0.30			0.30	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		731			827			407			425	
v/s Ratio Prot												
v/s Ratio Perm		0.46			c0.47			0.36			c0.48	
v/c Ratio		0.89			0.90			1.23			1.64	
Uniform Delay, d1		17.0			17.2			28.2			28.2	
Progression Factor		1.00			1.12			1.00			1.00	
Incremental Delay, d2		12.7			7.9			125.1			300.4	
Delay (s)		29.8			27.3			153.3			328.6	
Level of Service		C			C			F			F	
Approach Delay (s)		29.8			27.3			153.3			328.6	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	133.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	113.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	342	38	57	321	59	72	166	63	73	212	502
Future Volume (vph)	209	342	38	57	321	59	72	166	63	73	212	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	16	12	12	16	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.982			0.972				0.850
Flt Protected	0.950				0.994			0.988			0.987	
Satd. Flow (prot)	1486	1651	0	0	1669	0	0	1642	0	0	1655	1283
Flt Permitted	0.345				0.895			0.478			0.689	
Satd. Flow (perm)	540	1651	0	0	1503	0	0	794	0	0	1155	1283
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												546
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			824			435			332	
Travel Time (s)		5.3			18.7			9.9			7.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)					0			0				0
Adj. Flow (vph)	227	372	41	62	349	64	78	180	68	79	230	546
Shared Lane Traffic (%)												
Lane Group Flow (vph)	227	413	0	0	475	0	0	326	0	0	309	546
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Detector Phase	3	3 8		4	4		2	2		6	6	3
Switch Phase												
Minimum Initial (s)	6.0			6.0	6.0		10.0	10.0		10.0	10.0	6.0
Minimum Split (s)	9.1			11.0	11.0		15.0	15.0		15.0	15.0	9.1
Total Split (s)	9.1			19.0	19.0		22.9	22.9		22.9	22.9	9.1
Total Split (%)	11.4%			23.8%	23.8%		28.6%	28.6%		28.6%	28.6%	11.4%
Maximum Green (s)	6.0			14.0	14.0		17.9	17.9		17.9	17.9	6.0
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.1			2.0	2.0		2.0	2.0		2.0	2.0	0.1
Lost Time Adjust (s)	0.0				0.0			0.0			0.0	0.0
Total Lost Time (s)	3.1				5.0			5.0			5.0	3.1
Lead/Lag	Lag											Lag
Lead-Lag Optimize?	Yes											Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None			None	None		C-Max	C-Max		C-Max	C-Max	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	50.9	54.0			27.3			17.9			17.9	44.6
Actuated g/C Ratio	0.64	0.68			0.34			0.22			0.22	0.56
v/c Ratio	0.38	0.37			0.93			1.84			1.20	0.57
Control Delay	5.6	6.8			54.3			424.0			151.5	3.3
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	5.6	6.8			54.3			424.0			151.5	3.3
LOS	A	A			D			F			F	A

Lane Group	Ø5	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	5	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	6.0
Minimum Split (s)	29.0	11.0
Total Split (s)	29.0	19.0
Total Split (%)	36%	24%
Maximum Green (s)	25.0	14.0
Yellow Time (s)	4.0	3.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	2.0
Recall Mode	None	None
Walk Time (s)	7.0	
Flash Dont Walk (s)	18.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		

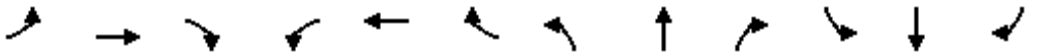
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		6.4			54.3			424.0			56.9	
Approach LOS		A			D			F			E	
Queue Length 50th (ft)	51	119			209			~251			~190	0
Queue Length 95th (ft)	m18	m46			#470			#406			#342	34
Internal Link Dist (ft)		154			744			355			252	
Turn Bay Length (ft)												
Base Capacity (vph)	600	1114			512			177			258	957
Starvation Cap Reductn	0	0			0			0			0	0
Spillback Cap Reductn	0	0			0			0			0	0
Storage Cap Reductn	0	0			0			0			0	0
Reduced v/c Ratio	0.38	0.37			0.93			1.84			1.20	0.57

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.84			
Intersection Signal Delay: 94.4		Intersection LOS: F	
Intersection Capacity Utilization 99.9%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 7: Winchester Ave & Munson St

Lane Group	Ø5	Ø8
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

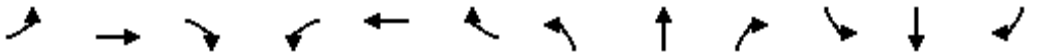
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	342	38	57	321	59	72	166	63	73	212	502
Future Volume (vph)	209	342	38	57	321	59	72	166	63	73	212	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	16	12	12	16	12	12	12	12
Total Lost time (s)	3.1	3.1			5.0			5.0			5.0	3.1
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.98			0.97			1.00	0.85
Flt Protected	0.95	1.00			0.99			0.99			0.99	1.00
Satd. Flow (prot)	1486	1652			1668			1642			1655	1282
Flt Permitted	0.34	1.00			0.89			0.48			0.69	1.00
Satd. Flow (perm)	539	1652			1502			795			1156	1282
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	372	41	62	349	64	78	180	68	79	230	546
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	276
Lane Group Flow (vph)	227	413	0	0	475	0	0	326	0	0	309	270
Parking (#/hr)					0			0				0
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Actuated Green, G (s)	49.0	52.1			27.3			17.9			17.9	39.6
Effective Green, g (s)	49.0	52.1			27.3			17.9			17.9	39.6
Actuated g/C Ratio	0.61	0.65			0.34			0.22			0.22	0.50
Clearance Time (s)	3.1				5.0			5.0			5.0	3.1
Vehicle Extension (s)	2.0				2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	587	1075			512			177			258	634
v/s Ratio Prot	0.10	0.25										c0.12
v/s Ratio Perm	0.13				c0.32			c0.41			0.27	0.10
v/c Ratio	0.39	0.38			0.93			1.84			1.20	0.43
Uniform Delay, d1	8.7	6.5			25.4			31.1			31.1	12.9
Progression Factor	0.92	1.09			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.0			22.7			399.9			120.2	0.2
Delay (s)	8.1	7.1			48.1			430.9			151.3	13.1
Level of Service	A	A			D			F			F	B
Approach Delay (s)		7.5			48.1			430.9			63.0	
Approach LOS		A			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	96.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.1
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	451	0	0	393	11	11	28	51	51	25	0
Future Volume (vph)	30	451	0	0	393	11	11	28	51	51	25	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	15	12	12	16	12	11	10	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.996			0.923				
Flt Protected		0.997						0.994		0.950		
Satd. Flow (prot)	0	1894	0	0	1837	0	0	1569	0	1540	0	0
Flt Permitted		0.997						0.994		0.950		
Satd. Flow (perm)	0	1894	0	0	1837	0	0	1569	0	1540	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		824			735			329			356	
Travel Time (s)		18.7			16.7			7.5			8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)								0				
Adj. Flow (vph)	33	490	0	0	427	12	12	30	55	55	27	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	523	0	0	439	0	0	97	0	55	27	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

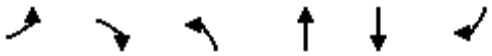
Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	451	0	0	393	11	11	28	51	51	25	0
Future Vol, veh/h	30	451	0	0	393	11	11	28	51	51	25	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	490	0	0	427	12	12	30	55	55	27	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	439	0	-	-	-	0	1003	995	490	1032	989	-
Stage 1	-	-	-	-	-	-	556	556	-	433	433	-
Stage 2	-	-	-	-	-	-	447	439	-	599	556	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	-
Pot Cap-1 Maneuver	1121	-	0	0	-	-	221	245	578	211	247	0
Stage 1	-	-	0	0	-	-	515	513	-	601	582	0
Stage 2	-	-	0	0	-	-	591	578	-	488	513	0
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1121	-	-	-	-	-	196	235	578	167	237	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	196	235	-	167	237	-
Stage 1	-	-	-	-	-	-	494	492	-	577	582	-
Stage 2	-	-	-	-	-	-	563	578	-	397	492	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	19.7	36.9
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	342	1121	-	-	-	167
HCM Lane V/C Ratio	0.286	0.029	-	-	-	0.332
HCM Control Delay (s)	19.7	8.3	0	-	-	36.9
HCM Lane LOS	C	A	A	-	-	E
HCM 95th %tile Q(veh)	1.2	0.1	-	-	-	1.4



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	66	455	351	199	232	39	
Future Volume (vph)	66	455	351	199	232	39	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	14	12	12	16	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.882				0.981		
Flt Protected	0.994			0.969			
Satd. Flow (prot)	1742	0	0	2046	2071	0	
Flt Permitted	0.994			0.379			
Satd. Flow (perm)	1742	0	0	800	2071	0	
Right Turn on Red		No				Yes	
Satd. Flow (RTOR)					10		
Link Speed (mph)	30			30	30		
Link Distance (ft)	735			185	377		
Travel Time (s)	16.7			4.2	8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	72	495	382	216	252	42	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	567	0	0	598	294	0	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	7		8	2 8	2		3
Permitted Phases			2				
Detector Phase	7		8	2 8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0		10.0		1.0
Minimum Split (s)	9.2		9.3		14.9		19.0
Total Split (s)	13.0		19.0		21.0		22.0
Total Split (%)	17.3%		25.3%		28.0%		29%
Maximum Green (s)	8.8		14.7		16.1		18.0
Yellow Time (s)	3.2		3.2		3.2		4.0
All-Red Time (s)	1.0		1.1		1.7		0.0
Lost Time Adjust (s)	0.0				0.0		
Total Lost Time (s)	4.2				4.9		
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Vehicle Extension (s)	1.0		1.0		2.0		3.0
Recall Mode	None		None		C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							8.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	30.8			30.2	16.1		
Actuated g/C Ratio	0.41			0.40	0.21		
v/c Ratio	0.79			1.08	0.65		
Control Delay	29.5			80.1	33.6		
Queue Delay	0.0			11.6	0.0		
Total Delay	29.5			91.7	33.6		
LOS	C			F	C		
Approach Delay	29.5			91.7	33.6		

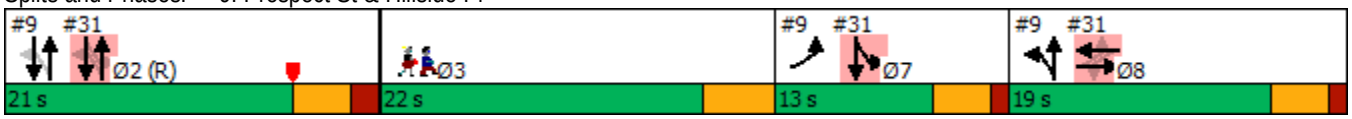
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Approach LOS	C			F	C		
Queue Length 50th (ft)	223			~226	121		
Queue Length 95th (ft)	#391			#410	200		
Internal Link Dist (ft)	655			105	297		
Turn Bay Length (ft)							
Base Capacity (vph)	715			556	452		
Starvation Cap Reductn	0			130	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.79			1.40	0.65		

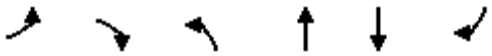
Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 8 (11%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 55.8		Intersection LOS: E	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Prospect St & Hillside Pl





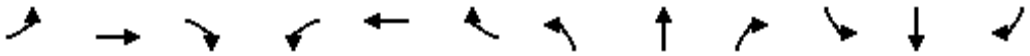
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	66	455	351	199	232	39
Future Volume (vph)	66	455	351	199	232	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	16	16	12
Total Lost time (s)	4.2			4.9	4.9	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.88			1.00	0.98	
Flt Protected	0.99			0.97	1.00	
Satd. Flow (prot)	1742			2046	2070	
Flt Permitted	0.99			0.38	1.00	
Satd. Flow (perm)	1742			801	2070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	495	382	216	252	42
RTOR Reduction (vph)	0	0	0	0	8	0
Lane Group Flow (vph)	567	0	0	598	286	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	7		8	2 8	2	
Permitted Phases			2			
Actuated Green, G (s)	30.8			30.8	16.1	
Effective Green, g (s)	30.8			30.8	16.1	
Actuated g/C Ratio	0.41			0.41	0.21	
Clearance Time (s)	4.2				4.9	
Vehicle Extension (s)	1.0				2.0	
Lane Grp Cap (vph)	715			572	444	
v/s Ratio Prot	c0.33			c0.20	0.14	
v/s Ratio Perm				c0.22		
v/c Ratio	0.79			1.05	0.64	
Uniform Delay, d1	19.3			22.1	26.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	5.6			50.0	7.0	
Delay (s)	25.0			72.1	33.9	
Level of Service	C			E	C	
Approach Delay (s)	25.0			72.1	33.9	
Approach LOS	C			E	C	

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

FUSS & O'NEILL

Appendix C

Intersection Capacity Analysis Worksheets
2026 Combined Traffic Volumes
Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Future Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.892			0.997				
Flt Protected		0.991			0.990						0.988	
Satd. Flow (prot)	0	1693	0	0	1434	0	0	1722	0	0	1788	0
Flt Permitted		0.797			0.890						0.457	
Satd. Flow (perm)	0	1361	0	0	1289	0	0	1722	0	0	827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			233			2				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			484			1195			450	
Travel Time (s)		6.8			11.0			27.2			10.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Adj. Flow (vph)	24	73	38	85	0	336	0	689	16	193	604	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	421	0	0	705	0	0	797	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Detector Phase	3	3		3	3			1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	
Minimum Split (s)	10.0	10.0		10.0	10.0			12.0		12.0	12.0	
Total Split (s)	24.0	24.0		24.0	24.0			40.0		40.0	40.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%			50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0			35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag								Lead		Lead	Lead	
Lead-Lag Optimize?								Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2		0.2	0.2	
Recall Mode	None	None		None	None			C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		17.9			17.9			48.9			48.9	
Actuated g/C Ratio		0.22			0.22			0.61			0.61	
v/c Ratio		0.42			0.90			0.67			1.58	
Control Delay		24.8			36.8			18.0			289.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		24.8			36.8			18.0			289.8	
LOS		C			D			B			F	
Approach Delay		24.8			36.8			18.0			289.8	

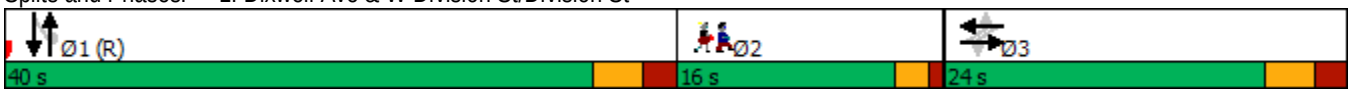
Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	20%
Maximum Green (s)	13.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	7.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			B			F	
Queue Length 50th (ft)		45			88			208			~575	
Queue Length 95th (ft)		98			#263			#553			#702	
Internal Link Dist (ft)		220			404			1115			370	
Turn Bay Length (ft)												
Base Capacity (vph)		367			504			1053			505	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.37			0.84			0.67			1.58	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.58			
Intersection Signal Delay: 127.6		Intersection LOS: F	
Intersection Capacity Utilization 121.1%		ICU Level of Service H	
Analysis Period (min) 15			

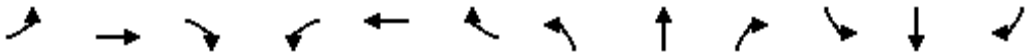
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixwell Ave & W Division St/Division St



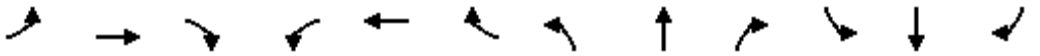
Lane Group	Ø2
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Future Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.89			1.00			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		1693			1434			1722			1788	
Flt Permitted		0.80			0.89			1.00			0.46	
Satd. Flow (perm)		1361			1289			1722			826	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	24	73	38	85	0	336	0	689	16	193	604	0
RTOR Reduction (vph)	0	18	0	0	181	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	117	0	0	240	0	0	704	0	0	797	0
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Actuated Green, G (s)		17.9			17.9			46.5			46.5	
Effective Green, g (s)		17.9			17.9			46.5			46.5	
Actuated g/C Ratio		0.22			0.22			0.58			0.58	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		304			288			1000			480	
v/s Ratio Prot								0.41				
v/s Ratio Perm		0.09			c0.19						c0.96	
v/c Ratio		0.39			0.83			0.70			1.66	
Uniform Delay, d1		26.4			29.6			11.9			16.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			17.6			4.2			306.3	
Delay (s)		26.7			47.2			16.0			323.1	
Level of Service		C			D			B			F	
Approach Delay (s)		26.7			47.2			16.0			323.1	
Approach LOS		C			D			B			F	

Intersection Summary			
HCM 2000 Control Delay	142.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



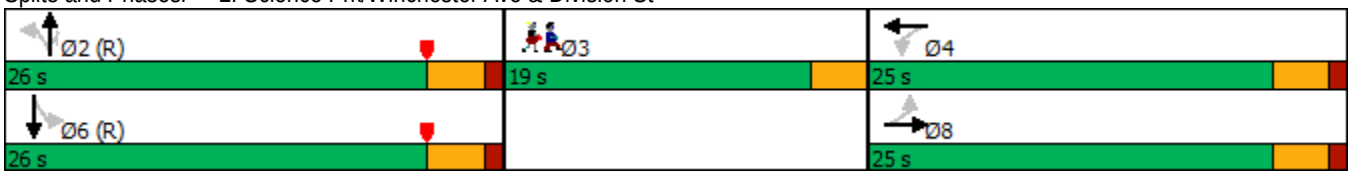
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	204	185	92	93	41	213	158	253	34	69	10
Future Volume (vph)	52	204	185	92	93	41	213	158	253	34	69	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	16	12	12	11	12	12	16	12
Storage Length (ft)	85		0	0		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	65			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.929			0.954				0.850		0.988	
Flt Protected	0.950			0.950				0.972			0.985	
Satd. Flow (prot)	1770	1730	0	1652	2014	0	0	1750	1583	0	2054	0
Flt Permitted	0.661			0.288				0.756			0.850	
Satd. Flow (perm)	1231	1730	0	501	2014	0	0	1361	1583	0	1773	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1609			389			208			307	
Travel Time (s)		36.6			8.8			4.7			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	222	201	100	101	45	232	172	275	37	75	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	423	0	100	146	0	0	404	275	0	123	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Detector Phase	8	8		4	4		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	25.0	25.0		25.0	25.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		37.1%	37.1%	37.1%	37.1%	37.1%	
Maximum Green (s)	21.0	21.0		21.0	21.0		22.0	22.0	22.0	22.0	22.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	23.4	23.4		23.4	23.4			38.6	38.6		38.6	
Actuated g/C Ratio	0.33	0.33		0.33	0.33			0.55	0.55		0.55	
v/c Ratio	0.14	0.73		0.60	0.22			0.54	0.32		0.13	
Control Delay	14.6	27.6		33.2	15.8			15.4	11.5		10.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	21.0
Total Split (s)	19.0
Total Split (%)	27%
Maximum Green (s)	16.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	14.6	27.6		33.2	15.8			15.4	11.5		10.0	
LOS	B	C		C	B			B	B		A	
Approach Delay		26.1			22.9			13.8			10.0	
Approach LOS		C			C			B			A	
Queue Length 50th (ft)	17	154		34	43			105	61		24	
Queue Length 95th (ft)	33	208		73	68			232	134		61	
Internal Link Dist (ft)		1529			309			128			227	
Turn Bay Length (ft)	85											
Base Capacity (vph)	439	617		178	718			750	873		978	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.13	0.69		0.56	0.20			0.54	0.32		0.13	

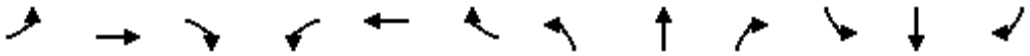
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 66 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Science Prk/Winchester Ave & Division St



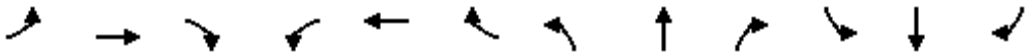
Lane Group	Ø3
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	204	185	92	93	41	213	158	253	34	69	10
Future Volume (vph)	52	204	185	92	93	41	213	158	253	34	69	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	16	12	12	11	12	12	16	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.93		1.00	0.95			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.99	
Satd. Flow (prot)	1770	1730		1652	2014			1750	1583		2055	
Flt Permitted	0.66	1.00		0.29	1.00			0.76	1.00		0.85	
Satd. Flow (perm)	1231	1730		501	2014			1360	1583		1773	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	222	201	100	101	45	232	172	275	37	75	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	57	423	0	100	146	0	0	404	275	0	123	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	23.4	23.4		23.4	23.4			38.6	38.6		38.6	
Effective Green, g (s)	23.4	23.4		23.4	23.4			38.6	38.6		38.6	
Actuated g/C Ratio	0.33	0.33		0.33	0.33			0.55	0.55		0.55	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	411	578		167	673			749	872		977	
v/s Ratio Prot		c0.24			0.07							
v/s Ratio Perm	0.05			0.20				c0.30	0.17		0.07	
v/c Ratio	0.14	0.73		0.60	0.22			0.54	0.32		0.13	
Uniform Delay, d1	16.3	20.5		19.4	16.7			10.0	8.5		7.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	4.1		3.8	0.1			2.8	0.9		0.3	
Delay (s)	16.3	24.6		23.2	16.8			12.8	9.5		7.8	
Level of Service	B	C		C	B			B	A		A	
Approach Delay (s)		23.7			19.4			11.5			7.8	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	463	12	55	228	1	9	29	108	0	5	5
Future Volume (vph)	13	463	12	55	228	1	9	29	108	0	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	175		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996						0.901			0.932	
Flt Protected		0.999			0.990			0.997				
Satd. Flow (prot)	0	3287	0	0	1844	0	0	1673	0	0	1736	0
Flt Permitted		0.999			0.990			0.997				
Satd. Flow (perm)	0	3287	0	0	1844	0	0	1673	0	0	1736	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			460			1047			403	
Travel Time (s)		10.0			10.5			23.8			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	503	13	60	248	1	10	32	117	0	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	530	0	0	309	0	0	159	0	0	10	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

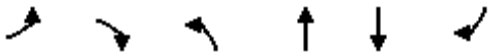
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	463	12	55	228	1	9	29	108	0	5	5
Future Vol, veh/h	13	463	12	55	228	1	9	29	108	0	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	503	13	60	248	1	10	32	117	0	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	249	0	0	516	0	0	912	907	258	665	913	249
Stage 1	-	-	-	-	-	-	538	538	-	369	369	-
Stage 2	-	-	-	-	-	-	374	369	-	296	544	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1315	-	-	1048	-	-	241	275	742	359	273	789
Stage 1	-	-	-	-	-	-	496	521	-	650	620	-
Stage 2	-	-	-	-	-	-	646	620	-	689	518	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1315	-	-	1048	-	-	221	253	742	257	251	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	221	253	-	257	251	-
Stage 1	-	-	-	-	-	-	489	513	-	640	579	-
Stage 2	-	-	-	-	-	-	594	579	-	536	510	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.7	16	14.7
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	485	1315	-	-	1048	-	-	381
HCM Lane V/C Ratio	0.327	0.011	-	-	0.057	-	-	0.029
HCM Control Delay (s)	16	7.8	0.1	-	8.6	0	-	14.7
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0.2	-	-	0.1



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	125	248	62	342	350	11
Future Volume (vph)	125	248	62	342	350	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.996	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1855	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1855	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	346			169	390	
Travel Time (s)	7.9			3.8	8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	270	67	372	380	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	270	67	372	392	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.1%		ICU Level of Service A	
Analysis Period (min) 15			

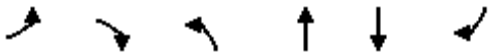
Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	125	248	62	342	350	11
Future Vol, veh/h	125	248	62	342	350	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	270	67	372	380	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	892	386	392	0	-	0
Stage 1	386	-	-	-	-	-
Stage 2	506	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	312	662	1167	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	294	662	1167	-	-	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.5	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1167	-	294	662	-	-
HCM Lane V/C Ratio	0.058	-	0.462	0.407	-	-
HCM Control Delay (s)	8.3	-	27.3	14.1	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.2	-	2.3	2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	38	10	598	966	2
Future Volume (vph)	9	38	10	598	966	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	14	12
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		70			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.891					
Flt Protected	0.990		0.950			
Satd. Flow (prot)	1643	0	1770	1925	1987	0
Flt Permitted	0.990		0.950			
Satd. Flow (perm)	1643	0	1770	1925	1987	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	223			332	170	
Travel Time (s)	5.1			7.5	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	41	11	650	1050	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	0	11	650	1052	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

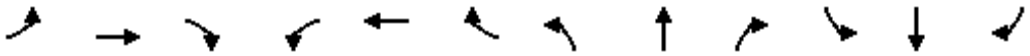
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	38	10	598	966	2
Future Vol, veh/h	9	38	10	598	966	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	41	11	650	1050	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1723	1051	1052	0	-	0
Stage 1	1051	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	98	276	662	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	96	276	662	-	-	-
Mov Cap-2 Maneuver	96	-	-	-	-	-
Stage 1	330	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.6	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	662	-	203	-	-
HCM Lane V/C Ratio	0.016	-	0.252	-	-
HCM Control Delay (s)	10.5	-	28.6	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-



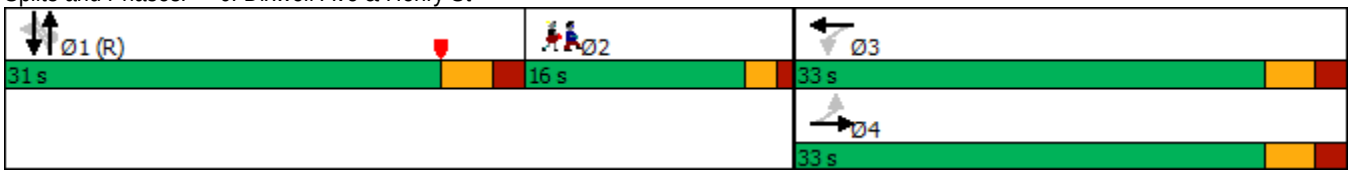
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Future Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	16	12	12	16	12	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.995			0.976			0.994	
Flt Protected		0.994			0.992			0.997			0.995	
Satd. Flow (prot)	0	1706	0	0	1805	0	0	1699	0	0	1808	0
Flt Permitted		0.804			0.767			0.814			0.766	
Satd. Flow (perm)	0	1380	0	0	1395	0	0	1387	0	0	1392	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			3			15			3	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		407			477			364			549	
Travel Time (s)		11.1			13.0			9.9			15.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Adj. Flow (vph)	89	548	60	134	684	31	38	413	99	66	605	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	697	0	0	849	0	0	550	0	0	701	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Detector Phase	4	4		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		12.0	12.0		12.0	12.0	
Total Split (s)	33.0	33.0		33.0	33.0		31.0	31.0		31.0	31.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		38.8%	38.8%		38.8%	38.8%	
Maximum Green (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag							Lead	Lead		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		0.2	0.2		0.2	0.2	
Recall Mode	Min	Min		Min	Min		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		41.8			41.8			26.0			26.0	
Actuated g/C Ratio		0.52			0.52			0.32			0.32	
v/c Ratio		0.96			1.16			1.20			1.54	
Control Delay		47.0			102.7			134.9			280.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		47.0			102.7			134.9			280.5	
LOS		D			F			F			F	

Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	20%
Maximum Green (s)	13.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	1.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		47.0			102.7			134.9			280.5	
Approach LOS		D			F			F			F	
Queue Length 50th (ft)		290			~485			~334			~506	
Queue Length 95th (ft)		#643			m#612			#527			#715	
Internal Link Dist (ft)		327			397			284			469	
Turn Bay Length (ft)												
Base Capacity (vph)		724			730			460			454	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.96			1.16			1.20			1.54	

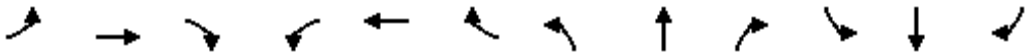
Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 26 (33%), Referenced to phase 1:NBSB, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.54			
Intersection Signal Delay: 139.7		Intersection LOS: F	
Intersection Capacity Utilization 129.9%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Dixwell Ave & Henry St



Lane Group	Ø2
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

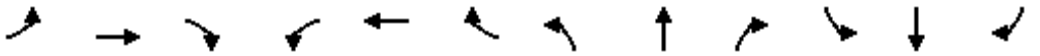
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Future Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	16	12	12	16	12	12	16	12
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.98			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1706			1805			1698			1809	
Flt Permitted		0.80			0.77			0.81			0.77	
Satd. Flow (perm)		1380			1395			1386			1393	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	89	548	60	134	684	31	38	413	99	66	605	30
RTOR Reduction (vph)	0	3	0	0	1	0	0	11	0	0	2	0
Lane Group Flow (vph)	0	694	0	0	848	0	0	539	0	0	699	0
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Actuated Green, G (s)		41.8			41.8			23.6			23.6	
Effective Green, g (s)		41.8			41.8			23.6			23.6	
Actuated g/C Ratio		0.52			0.52			0.30			0.30	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		721			728			408			410	
v/s Ratio Prot												
v/s Ratio Perm		0.50			c0.61			0.39			c0.50	
v/c Ratio		0.96			1.16			1.32			1.70	
Uniform Delay, d1		18.3			19.1			28.2			28.2	
Progression Factor		1.00			1.43			1.00			1.00	
Incremental Delay, d2		24.3			75.5			161.2			327.4	
Delay (s)		42.6			102.9			189.4			355.6	
Level of Service		D			F			F			F	
Approach Delay (s)		42.6			102.9			189.4			355.6	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	168.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	129.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	342	38	57	321	59	72	264	63	73	333	598
Future Volume (vph)	288	342	38	57	321	59	72	264	63	73	333	598
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	16	12	12	16	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.982			0.979				0.850
Flt Protected	0.950				0.994			0.991			0.991	
Satd. Flow (prot)	1486	1651	0	0	1669	0	0	1659	0	0	1661	1283
Flt Permitted	0.248				0.878			0.269			0.691	
Satd. Flow (perm)	388	1651	0	0	1474	0	0	450	0	0	1158	1283
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												650
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			824			435			332	
Travel Time (s)		5.3			18.7			9.9			7.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)					0			0				0
Adj. Flow (vph)	313	372	41	62	349	64	78	287	68	79	362	650
Shared Lane Traffic (%)												
Lane Group Flow (vph)	313	413	0	0	475	0	0	433	0	0	441	650
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Detector Phase	3	3 8		4	4		2	2		6	6	3
Switch Phase												
Minimum Initial (s)	6.0			6.0	6.0		10.0	10.0		10.0	10.0	6.0
Minimum Split (s)	9.1			11.0	11.0		15.0	15.0		15.0	15.0	9.1
Total Split (s)	9.1			17.0	17.0		24.9	24.9		24.9	24.9	9.1
Total Split (%)	11.4%			21.3%	21.3%		31.1%	31.1%		31.1%	31.1%	11.4%
Maximum Green (s)	6.0			12.0	12.0		19.9	19.9		19.9	19.9	6.0
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.1			2.0	2.0		2.0	2.0		2.0	2.0	0.1
Lost Time Adjust (s)	0.0				0.0			0.0			0.0	0.0
Total Lost Time (s)	3.1				5.0			5.0			5.0	3.1
Lead/Lag	Lag											Lag
Lead-Lag Optimize?	Yes											Yes
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None			None	None		C-Max	C-Max		C-Max	C-Max	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	48.9	52.0			16.1			19.9			19.9	55.8
Actuated g/C Ratio	0.61	0.65			0.20			0.25			0.25	0.70
v/c Ratio	0.47	0.38			1.60			3.90			1.53	0.60
Control Delay	7.4	6.9			313.3			1340.3			282.5	2.9
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	7.4	6.9			313.3			1340.3			282.5	2.9
LOS	A	A			F			F			F	A

Lane Group	Ø5	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	5	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	6.0
Minimum Split (s)	29.0	11.0
Total Split (s)	29.0	17.0
Total Split (%)	36%	21%
Maximum Green (s)	25.0	12.0
Yellow Time (s)	4.0	3.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	2.0
Recall Mode	None	None
Walk Time (s)	7.0	
Flash Dont Walk (s)	18.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		

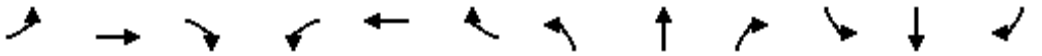
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		7.1			313.3			1340.3			115.9	
Approach LOS		A			F			F			F	
Queue Length 50th (ft)	72	103			~316			~398			~314	0
Queue Length 95th (ft)	m38	m56			#543			#535			#488	25
Internal Link Dist (ft)		154			744			355			252	
Turn Bay Length (ft)												
Base Capacity (vph)	661	1073			296			111			288	1091
Starvation Cap Reductn	0	0			0			0			0	0
Spillback Cap Reductn	0	0			0			0			0	0
Storage Cap Reductn	0	0			0			0			0	0
Reduced v/c Ratio	0.47	0.38			1.60			3.90			1.53	0.60

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 3.90			
Intersection Signal Delay: 315.9		Intersection LOS: F	
Intersection Capacity Utilization 112.7%		ICU Level of Service H	
Analysis Period (min) 15			
~	Volume exceeds capacity, queue is theoretically infinite.		
	Queue shown is maximum after two cycles.		
#	95th percentile volume exceeds capacity, queue may be longer.		
	Queue shown is maximum after two cycles.		
m	Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 7: Winchester Ave & Munson St

Lane Group	Ø5	Ø8
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

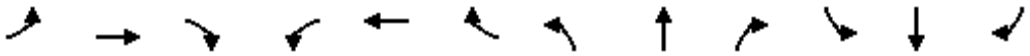
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	342	38	57	321	59	72	264	63	73	333	598
Future Volume (vph)	288	342	38	57	321	59	72	264	63	73	333	598
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	16	12	12	16	12	12	12	12
Total Lost time (s)	3.1	3.1			5.0			5.0			5.0	3.1
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.98			0.98			1.00	0.85
Flt Protected	0.95	1.00			0.99			0.99			0.99	1.00
Satd. Flow (prot)	1486	1652			1668			1659			1662	1282
Flt Permitted	0.25	1.00			0.88			0.27			0.69	1.00
Satd. Flow (perm)	389	1652			1475			451			1159	1282
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	372	41	62	349	64	78	287	68	79	362	650
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	237
Lane Group Flow (vph)	313	413	0	0	475	0	0	433	0	0	441	413
Parking (#/hr)					0			0				0
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Actuated Green, G (s)	47.0	50.1			16.1			19.9			19.9	50.8
Effective Green, g (s)	47.0	50.1			16.1			19.9			19.9	50.8
Actuated g/C Ratio	0.59	0.63			0.20			0.25			0.25	0.63
Clearance Time (s)	3.1				5.0			5.0			5.0	3.1
Vehicle Extension (s)	2.0				2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	652	1034			296			112			288	814
v/s Ratio Prot	0.19	0.25										c0.20
v/s Ratio Perm	0.10				c0.32			c0.96			0.38	0.13
v/c Ratio	0.48	0.40			1.60			3.87			1.53	0.51
Uniform Delay, d1	9.8	7.5			31.9			30.1			30.1	7.9
Progression Factor	0.76	0.95			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.0			287.4			1311.1			255.9	0.2
Delay (s)	7.5	7.1			319.4			1341.1			285.9	8.0
Level of Service	A	A			F			F			F	A
Approach Delay (s)		7.3			319.4			1341.1			120.4	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	318.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.88		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.1
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	451	0	0	393	50	11	48	51	124	0	25
Future Volume (vph)	30	451	0	0	393	50	11	48	51	124	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	15	12	12	16	12	11	10	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.985			0.938			0.865	
Flt Protected		0.997						0.995		0.950		
Satd. Flow (prot)	0	1894	0	0	1816	0	0	1596	0	1540	0	0
Flt Permitted		0.997						0.995		0.950		
Satd. Flow (perm)	0	1894	0	0	1816	0	0	1596	0	1540	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		824			735			329			356	
Travel Time (s)		18.7			16.7			7.5			8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)								0				
Adj. Flow (vph)	33	490	0	0	427	54	12	52	55	135	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	523	0	0	481	0	0	119	0	135	27	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

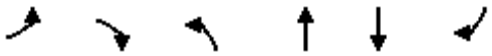
Intersection	
Int Delay, s/veh	17.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	451	0	0	393	50	11	48	51	124	0	25
Future Vol, veh/h	30	451	0	0	393	50	11	48	51	124	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	490	0	0	427	54	12	52	55	135	0	27

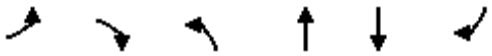
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	481	0	-	-	-	0	1024	1037	490	1064	-	454
Stage 1	-	-	-	-	-	-	556	556	-	454	-	-
Stage 2	-	-	-	-	-	-	468	481	-	610	-	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1082	-	0	0	-	-	214	231	578	201	0	606
Stage 1	-	-	0	0	-	-	515	513	-	586	0	-
Stage 2	-	-	0	0	-	-	575	554	-	482	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1082	-	-	-	-	-	198	221	578	144	-	606
Mov Cap-2 Maneuver	-	-	-	-	-	-	198	221	-	144	-	-
Stage 1	-	-	-	-	-	-	493	491	-	561	-	-
Stage 2	-	-	-	-	-	-	549	554	-	373	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	24.2	120.9
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	305	1082	-	-	-	165
HCM Lane V/C Ratio	0.392	0.03	-	-	-	0.982
HCM Control Delay (s)	24.2	8.4	0	-	-	120.9
HCM Lane LOS	C	A	A	-	-	F
HCM 95th %tile Q(veh)	1.8	0.1	-	-	-	7.6



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	66	528	390	199	232	39	
Future Volume (vph)	66	528	390	199	232	39	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	14	12	12	16	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.880				0.981		
Flt Protected	0.994			0.968			
Satd. Flow (prot)	1738	0	0	2044	2071	0	
Flt Permitted	0.994			0.374			
Satd. Flow (perm)	1738	0	0	790	2071	0	
Right Turn on Red		No				Yes	
Satd. Flow (RTOR)					10		
Link Speed (mph)	30			30	30		
Link Distance (ft)	735			185	377		
Travel Time (s)	16.7			4.2	8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	72	574	424	216	252	42	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	646	0	0	640	294	0	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	7		8	2 8	2		3
Permitted Phases			2				
Detector Phase	7		8	2 8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0		10.0		1.0
Minimum Split (s)	9.2		9.3		14.9		19.0
Total Split (s)	13.0		19.0		21.0		22.0
Total Split (%)	17.3%		25.3%		28.0%		29%
Maximum Green (s)	8.8		14.7		16.1		18.0
Yellow Time (s)	3.2		3.2		3.2		4.0
All-Red Time (s)	1.0		1.1		1.7		0.0
Lost Time Adjust (s)	0.0				0.0		
Total Lost Time (s)	4.2				4.9		
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Vehicle Extension (s)	1.0		1.0		2.0		3.0
Recall Mode	None		None		C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							8.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	30.8			30.2	16.1		
Actuated g/C Ratio	0.41			0.40	0.21		
v/c Ratio	0.91			1.16	0.65		
Control Delay	40.1			109.8	33.6		
Queue Delay	0.0			2.2	0.0		
Total Delay	40.1			112.0	33.6		
LOS	D			F	C		
Approach Delay	40.1			112.0	33.6		



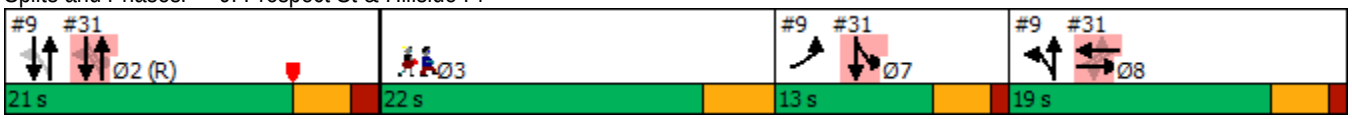
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Approach LOS	D			F	C		
Queue Length 50th (ft)	273			~269	121		
Queue Length 95th (ft)	#479			#470	200		
Internal Link Dist (ft)	655			105	297		
Turn Bay Length (ft)							
Base Capacity (vph)	713			553	452		
Starvation Cap Reductn	0			126	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.91			1.50	0.65		

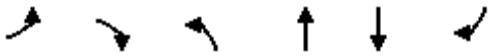
Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 8 (11%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 68.0		Intersection LOS: E	
Intersection Capacity Utilization 94.6%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Prospect St & Hillside Pl





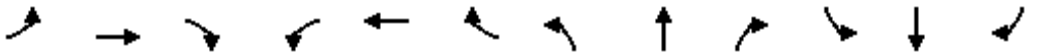
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	66	528	390	199	232	39
Future Volume (vph)	66	528	390	199	232	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	16	16	12
Total Lost time (s)	4.2			4.9	4.9	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.88			1.00	0.98	
Flt Protected	0.99			0.97	1.00	
Satd. Flow (prot)	1739			2043	2070	
Flt Permitted	0.99			0.37	1.00	
Satd. Flow (perm)	1739			790	2070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	574	424	216	252	42
RTOR Reduction (vph)	0	0	0	0	8	0
Lane Group Flow (vph)	646	0	0	640	286	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	7		8	2 8	2	
Permitted Phases			2			
Actuated Green, G (s)	30.8			30.8	16.1	
Effective Green, g (s)	30.8			30.8	16.1	
Actuated g/C Ratio	0.41			0.41	0.21	
Clearance Time (s)	4.2				4.9	
Vehicle Extension (s)	1.0				2.0	
Lane Grp Cap (vph)	714			570	444	
v/s Ratio Prot	c0.37			c0.22	0.14	
v/s Ratio Perm				c0.24		
v/c Ratio	0.90			1.12	0.64	
Uniform Delay, d1	20.7			22.1	26.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	14.6			76.2	7.0	
Delay (s)	35.4			98.3	33.9	
Level of Service	D			F	C	
Approach Delay (s)	35.4			98.3	33.9	
Approach LOS	D			F	C	

Intersection Summary			
HCM 2000 Control Delay	60.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

FUSS & O'NEILL

Appendix C

Intersection Capacity Analysis Worksheets
2026 Improved Signal Optimization Traffic Volumes
Afternoon Peak Hour



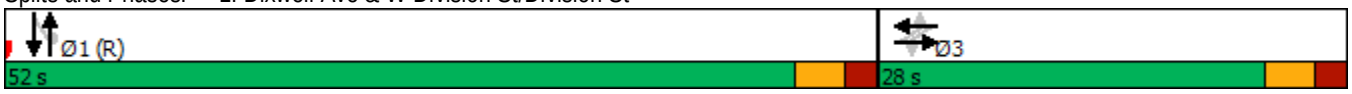
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Future Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.892			0.997				
Flt Protected		0.991			0.990					0.950		
Satd. Flow (prot)	0	1693	0	0	1434	0	0	1722	0	1719	1810	0
Flt Permitted		0.776			0.888					0.304		
Satd. Flow (perm)	0	1326	0	0	1286	0	0	1722	0	550	1810	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			236			3				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			484			1195			450	
Travel Time (s)		6.8			11.0			27.2			10.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Adj. Flow (vph)	24	73	38	85	0	336	0	689	16	193	604	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	421	0	0	705	0	193	604	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Detector Phase	3	3		3	3			1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0		27.0	27.0			23.0		23.0	23.0	
Total Split (s)	28.0	28.0		28.0	28.0			52.0		52.0	52.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%			65.0%		65.0%	65.0%	
Maximum Green (s)	23.0	23.0		23.0	23.0			47.0		47.0	47.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2		0.2	0.2	
Recall Mode	None	None		None	None			C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)		17.0			17.0			53.0		53.0	53.0	
Actuated g/C Ratio		0.21			0.21			0.66		0.66	0.66	
v/c Ratio		0.45			0.92			0.62		0.53	0.50	
Control Delay		25.1			39.4			12.3		16.0	10.1	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		25.1			39.4			12.3		16.0	10.1	
LOS		C			D			B		B	B	
Approach Delay		25.1			39.4			12.3			11.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			B			B	
Queue Length 50th (ft)		46			91			190		48	145	
Queue Length 95th (ft)		90			#239			351		134	262	
Internal Link Dist (ft)		220			404			1115			370	
Turn Bay Length (ft)												
Base Capacity (vph)		399			537			1142		364	1199	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.34			0.78			0.62		0.53	0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixwell Ave & W Division St/Division St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Future Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.96			0.89			1.00		1.00	1.00	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1693			1434			1722		1719	1810	
Flt Permitted		0.78			0.89			1.00		0.30	1.00	
Satd. Flow (perm)		1325			1286			1722		551	1810	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	24	73	38	85	0	336	0	689	16	193	604	0
RTOR Reduction (vph)	0	20	0	0	186	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	115	0	0	235	0	0	704	0	193	604	0
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Actuated Green, G (s)		17.0			17.0			53.0		53.0	53.0	
Effective Green, g (s)		17.0			17.0			53.0		53.0	53.0	
Actuated g/C Ratio		0.21			0.21			0.66		0.66	0.66	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.0			2.0			0.2		0.2	0.2	
Lane Grp Cap (vph)		281			273			1140		365	1199	
v/s Ratio Prot								c0.41			0.33	
v/s Ratio Perm		0.09			c0.18					0.35		
v/c Ratio		0.41			0.86			0.62		0.53	0.50	
Uniform Delay, d1		27.2			30.4			7.7		7.0	6.8	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			22.5			2.5		5.4	1.5	
Delay (s)		27.5			52.9			10.2		12.4	8.4	
Level of Service		C			D			B		B	A	
Approach Delay (s)		27.5			52.9			10.2			9.3	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Future Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	16	12	12	16	12
Storage Length (ft)	50		0	500		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	96			96			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.993			0.976			0.994	
Flt Protected	0.950			0.950				0.997			0.995	
Satd. Flow (prot)	1547	1711	0	1533	1602	0	0	1699	0	0	1808	0
Flt Permitted	0.131			0.224				0.923			0.892	
Satd. Flow (perm)	213	1711	0	361	1602	0	0	1573	0	0	1621	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			4			17			3	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		407			477			364			549	
Travel Time (s)		11.1			13.0			9.9			15.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Adj. Flow (vph)	89	548	60	134	684	31	38	413	99	66	605	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	608	0	134	715	0	0	550	0	0	701	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Detector Phase	4	4		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		39.0	39.0		39.0	39.0	
Total Split (%)	51.3%	51.3%		51.3%	51.3%		48.8%	48.8%		48.8%	48.8%	
Maximum Green (s)	36.0	36.0		36.0	36.0		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		0.2	0.2		0.2	0.2	
Recall Mode	Min	Min		Min	Min		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	36.0	36.0		36.0	36.0			34.0			34.0	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.42			0.42	
v/c Ratio	0.94	0.79		0.83	0.99			0.81			1.02	
Control Delay	105.8	27.5		51.3	49.2			31.2			63.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	105.8	27.5		51.3	49.2			31.2			63.6	
LOS	F	C		D	D			C			E	
Approach Delay		37.5			49.5			31.2			63.6	
Approach LOS		D			D			C			E	
Queue Length 50th (ft)	40	244		61	363			227			~352	
Queue Length 95th (ft)	#133	#403		m#99	m#538			#407			#584	
Internal Link Dist (ft)		327			397			284			469	
Turn Bay Length (ft)	50			500								
Base Capacity (vph)	95	774		162	723			678			690	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.94	0.79		0.83	0.99			0.81			1.02	

Intersection Summary

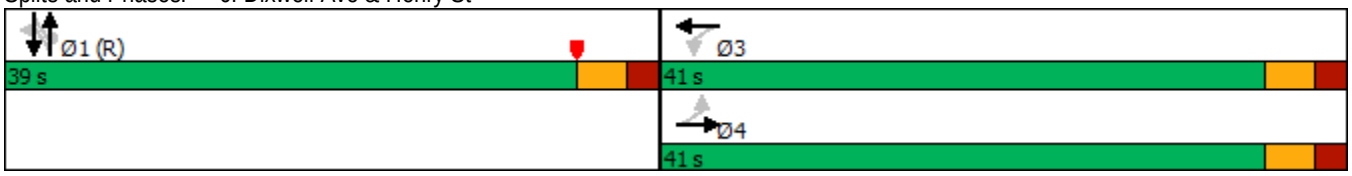
Area Type: CBD
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 46.4 Intersection LOS: D
Intersection Capacity Utilization 111.4% ICU Level of Service H
Analysis Period (min) 15

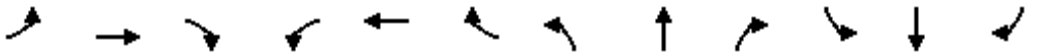
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Dixwell Ave & Henry St

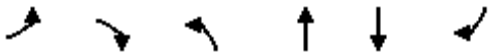




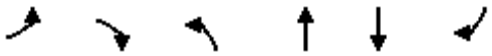
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Future Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	12	12	12	16	12	12	16	12
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1547	1711		1533	1603			1698			1809	
Flt Permitted	0.13	1.00		0.22	1.00			0.92			0.89	
Satd. Flow (perm)	214	1711		361	1603			1572			1622	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	89	548	60	134	684	31	38	413	99	66	605	30
RTOR Reduction (vph)	0	5	0	0	2	0	0	10	0	0	2	0
Lane Group Flow (vph)	89	603	0	134	713	0	0	540	0	0	699	0
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Actuated Green, G (s)	36.0	36.0		36.0	36.0			34.0			34.0	
Effective Green, g (s)	36.0	36.0		36.0	36.0			34.0			34.0	
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.42			0.42	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2			0.2	
Lane Grp Cap (vph)	96	769		162	721			668			689	
v/s Ratio Prot		0.35			c0.44							
v/s Ratio Perm	0.42			0.37				0.34			c0.43	
v/c Ratio	0.93	0.78		0.83	0.99			0.81			1.01	
Uniform Delay, d1	20.8	18.7		19.3	21.8			20.2			23.0	
Progression Factor	1.00	1.00		0.97	1.00			1.00			1.00	
Incremental Delay, d2	67.1	4.9		19.6	24.6			10.2			38.1	
Delay (s)	87.8	23.6		38.3	46.4			30.3			61.1	
Level of Service	F	C		D	D			C			E	
Approach Delay (s)		31.8			45.1			30.3			61.1	
Approach LOS		C			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	66	528	390	199	232	39	
Future Volume (vph)	66	528	390	199	232	39	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	14	12	12	16	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.880				0.981		
Flt Protected	0.994		0.950				
Satd. Flow (prot)	1738	0	1770	2111	2071	0	
Flt Permitted	0.994		0.412				
Satd. Flow (perm)	1738	0	767	2111	2071	0	
Right Turn on Red		No				Yes	
Satd. Flow (RTOR)					11		
Link Speed (mph)	30			30	30		
Link Distance (ft)	735			185	377		
Travel Time (s)	16.7			4.2	8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	72	574	424	216	252	42	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	646	0	424	216	294	0	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	7		8	2 8	2		3
Permitted Phases			2				
Detector Phase	7		8	2 8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0		10.0		1.0
Minimum Split (s)	9.2		9.3		14.9		19.0
Total Split (s)	16.0		15.0		25.0		19.0
Total Split (%)	21.3%		20.0%		33.3%		25%
Maximum Green (s)	11.8		10.7		20.1		15.0
Yellow Time (s)	3.2		3.2		3.2		4.0
All-Red Time (s)	1.0		1.1		1.7		0.0
Lost Time Adjust (s)	0.0		0.0		0.0		
Total Lost Time (s)	4.2		4.3		4.9		
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Vehicle Extension (s)	1.0		1.0		2.0		3.0
Recall Mode	None		None		C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							8.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	30.8		31.4	35.1	20.1		
Actuated g/C Ratio	0.41		0.42	0.47	0.27		
v/c Ratio	0.91		0.91	0.22	0.52		
Control Delay	40.1		43.6	12.6	26.4		
Queue Delay	0.0		21.5	5.1	0.0		
Total Delay	40.1		65.1	17.7	26.4		
LOS	D		E	B	C		
Approach Delay	40.1			49.1	26.4		

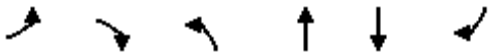


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Approach LOS	D			D	C		
Queue Length 50th (ft)	273		129	57	111		
Queue Length 95th (ft)	#479		#245	97	184		
Internal Link Dist (ft)	655			105	297		
Turn Bay Length (ft)							
Base Capacity (vph)	713		464	987	563		
Starvation Cap Reductn	0		51	698	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.91		1.03	0.75	0.52		

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 8 (11%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 41.2		Intersection LOS: D	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Prospect St & Hillside Pl



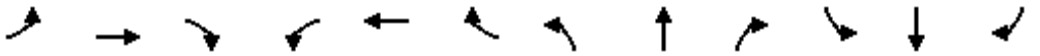
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	66	528	390	199	232	39
Future Volume (vph)	66	528	390	199	232	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	16	16	12
Total Lost time (s)	4.2		4.3	4.9	4.9	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	0.98	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1739		1770	2111	2070	
Flt Permitted	0.99		0.41	1.00	1.00	
Satd. Flow (perm)	1739		768	2111	2070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	574	424	216	252	42
RTOR Reduction (vph)	0	0	0	0	8	0
Lane Group Flow (vph)	646	0	424	216	286	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	7		8	2 8	2	
Permitted Phases			2			
Actuated Green, G (s)	30.8		30.8	35.1	20.1	
Effective Green, g (s)	30.8		30.8	30.8	20.1	
Actuated g/C Ratio	0.41		0.41	0.41	0.27	
Clearance Time (s)	4.2		4.3		4.9	
Vehicle Extension (s)	1.0		1.0		2.0	
Lane Grp Cap (vph)	714		458	866	554	
v/s Ratio Prot	c0.37		c0.13	0.10	0.14	
v/s Ratio Perm			c0.25			
v/c Ratio	0.90		0.93	0.25	0.52	
Uniform Delay, d1	20.7		19.0	14.5	23.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	14.6		24.3	0.1	3.4	
Delay (s)	35.4		43.3	14.6	26.7	
Level of Service	D		D	B	C	
Approach Delay (s)	35.4			33.6	26.7	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

FUSS & O'NEILL

Appendix C

Intersection Capacity Analysis Worksheets
2026 Improved Roadway Modifications Traffic Volumes
Afternoon Peak Hour



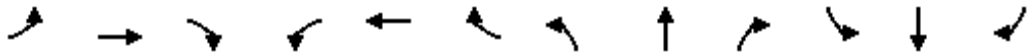
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Future Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.892			0.997				
Flt Protected		0.991			0.990						0.988	
Satd. Flow (prot)	0	1693	0	0	1434	0	0	1722	0	0	1788	0
Flt Permitted		0.776			0.888						0.555	
Satd. Flow (perm)	0	1326	0	0	1286	0	0	1722	0	0	1004	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			236			3				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			484			1195			450	
Travel Time (s)		6.8			11.0			27.2			10.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Adj. Flow (vph)	24	73	38	85	0	336	0	689	16	193	604	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	421	0	0	705	0	0	797	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Detector Phase	3	3		3	3			1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0			7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0		27.0	27.0			23.0		23.0	23.0	
Total Split (s)	28.0	28.0		28.0	28.0			52.0		52.0	52.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%			65.0%		65.0%	65.0%	
Maximum Green (s)	23.0	23.0		23.0	23.0			47.0		47.0	47.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0			0.2		0.2	0.2	
Recall Mode	None	None		None	None			C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)		17.0			17.0			53.0			53.0	
Actuated g/C Ratio		0.21			0.21			0.66			0.66	
v/c Ratio		0.45			0.92			0.62			1.20	
Control Delay		25.1			39.4			12.3			123.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		25.1			39.4			12.3			123.0	
LOS		C			D			B			F	
Approach Delay		25.1			39.4			12.3			123.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			B			F	
Queue Length 50th (ft)		46			91			190			~504	
Queue Length 95th (ft)		90			#239			351			#743	
Internal Link Dist (ft)		220			404			1115			370	
Turn Bay Length (ft)												
Base Capacity (vph)		399			537			1142			665	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.34			0.78			0.62			1.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 61.6		Intersection LOS: E	
Intersection Capacity Utilization 121.1%		ICU Level of Service H	
Analysis Period (min) 15			

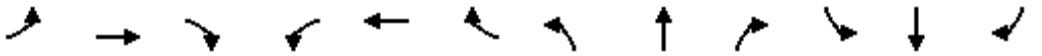
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixwell Ave & W Division St/Division St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Future Volume (vph)	23	71	37	82	0	326	0	668	16	187	586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.89			1.00			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		1693			1434			1722			1788	
Flt Permitted		0.78			0.89			1.00			0.56	
Satd. Flow (perm)		1325			1286			1722			1004	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	24	73	38	85	0	336	0	689	16	193	604	0
RTOR Reduction (vph)	0	20	0	0	186	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	115	0	0	235	0	0	704	0	0	797	0
Heavy Vehicles (%)	7%	7%	7%	17%	17%	17%	10%	10%	10%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		3			3			1			1	
Permitted Phases	3			3						1		
Actuated Green, G (s)		17.0			17.0			53.0			53.0	
Effective Green, g (s)		17.0			17.0			53.0			53.0	
Actuated g/C Ratio		0.21			0.21			0.66			0.66	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		281			273			1140			665	
v/s Ratio Prot								0.41				
v/s Ratio Perm		0.09			c0.18						c0.79	
v/c Ratio		0.41			0.86			0.62			1.20	
Uniform Delay, d1		27.2			30.4			7.7			13.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			22.5			2.5			103.4	
Delay (s)		27.5			52.9			10.2			116.9	
Level of Service		C			D			B			F	
Approach Delay (s)		27.5			52.9			10.2			116.9	
Approach LOS		C			D			B			F	

Intersection Summary			
HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



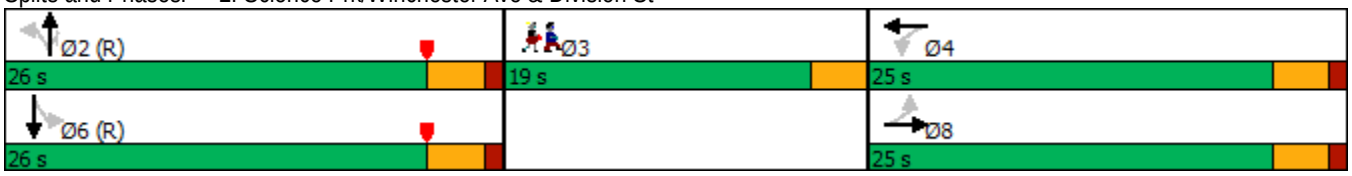
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	204	185	92	93	41	213	158	253	34	69	10
Future Volume (vph)	52	204	185	92	93	41	213	158	253	34	69	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	16	12	12	11	12	12	16	12
Storage Length (ft)	85		0	0		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	65			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.929			0.954				0.850		0.988	
Flt Protected	0.950			0.950				0.972			0.985	
Satd. Flow (prot)	1770	1730	0	1652	2014	0	0	1750	1583	0	2054	0
Flt Permitted	0.661			0.288				0.756			0.850	
Satd. Flow (perm)	1231	1730	0	501	2014	0	0	1361	1583	0	1773	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1609			389			208			307	
Travel Time (s)		36.6			8.8			4.7			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	222	201	100	101	45	232	172	275	37	75	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	423	0	100	146	0	0	404	275	0	123	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Detector Phase	8	8		4	4		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	25.0	25.0		25.0	25.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		37.1%	37.1%	37.1%	37.1%	37.1%	
Maximum Green (s)	21.0	21.0		21.0	21.0		22.0	22.0	22.0	22.0	22.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	23.4	23.4		23.4	23.4			38.6	38.6		38.6	
Actuated g/C Ratio	0.33	0.33		0.33	0.33			0.55	0.55		0.55	
v/c Ratio	0.14	0.73		0.60	0.22			0.54	0.32		0.13	
Control Delay	14.6	27.6		33.2	15.8			15.4	11.5		10.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	21.0
Total Split (s)	19.0
Total Split (%)	27%
Maximum Green (s)	16.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	14.6	27.6		33.2	15.8			15.4	11.5		10.0	
LOS	B	C		C	B			B	B		A	
Approach Delay		26.1			22.9			13.8			10.0	
Approach LOS		C			C			B			A	
Queue Length 50th (ft)	17	154		34	43			105	61		24	
Queue Length 95th (ft)	33	208		73	68			232	134		61	
Internal Link Dist (ft)		1529			309			128			227	
Turn Bay Length (ft)	85											
Base Capacity (vph)	439	617		178	718			750	873		978	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.13	0.69		0.56	0.20			0.54	0.32		0.13	

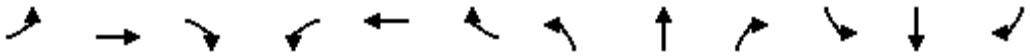
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 66 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Science Prk/Winchester Ave & Division St



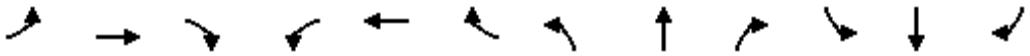
Lane Group	Ø3
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	204	185	92	93	41	213	158	253	34	69	10
Future Volume (vph)	52	204	185	92	93	41	213	158	253	34	69	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	16	12	12	11	12	12	16	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.93		1.00	0.95			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.99	
Satd. Flow (prot)	1770	1730		1652	2014			1750	1583		2055	
Flt Permitted	0.66	1.00		0.29	1.00			0.76	1.00		0.85	
Satd. Flow (perm)	1231	1730		501	2014			1360	1583		1773	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	222	201	100	101	45	232	172	275	37	75	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	57	423	0	100	146	0	0	404	275	0	123	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	23.4	23.4		23.4	23.4			38.6	38.6		38.6	
Effective Green, g (s)	23.4	23.4		23.4	23.4			38.6	38.6		38.6	
Actuated g/C Ratio	0.33	0.33		0.33	0.33			0.55	0.55		0.55	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	411	578		167	673			749	872		977	
v/s Ratio Prot		c0.24			0.07							
v/s Ratio Perm	0.05			0.20				c0.30	0.17		0.07	
v/c Ratio	0.14	0.73		0.60	0.22			0.54	0.32		0.13	
Uniform Delay, d1	16.3	20.5		19.4	16.7			10.0	8.5		7.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	4.1		3.8	0.1			2.8	0.9		0.3	
Delay (s)	16.3	24.6		23.2	16.8			12.8	9.5		7.8	
Level of Service	B	C		C	B			B	A		A	
Approach Delay (s)		23.7			19.4			11.5			7.8	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	463	12	55	228	1	9	29	108	0	5	5
Future Volume (vph)	13	463	12	55	228	1	9	29	108	0	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	10	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	175		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996						0.901			0.932	
Flt Protected		0.999			0.990			0.997				
Satd. Flow (prot)	0	3287	0	0	1844	0	0	1673	0	0	1736	0
Flt Permitted		0.999			0.990			0.997				
Satd. Flow (perm)	0	3287	0	0	1844	0	0	1673	0	0	1736	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			460			1047			403	
Travel Time (s)		10.0			10.5			23.8			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	503	13	60	248	1	10	32	117	0	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	530	0	0	309	0	0	159	0	0	10	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

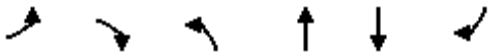
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	463	12	55	228	1	9	29	108	0	5	5
Future Vol, veh/h	13	463	12	55	228	1	9	29	108	0	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	503	13	60	248	1	10	32	117	0	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	249	0	0	516	0	0	912	907	258	665	913	249
Stage 1	-	-	-	-	-	-	538	538	-	369	369	-
Stage 2	-	-	-	-	-	-	374	369	-	296	544	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1315	-	-	1048	-	-	241	275	742	359	273	789
Stage 1	-	-	-	-	-	-	496	521	-	650	620	-
Stage 2	-	-	-	-	-	-	646	620	-	689	518	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1315	-	-	1048	-	-	221	253	742	257	251	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	221	253	-	257	251	-
Stage 1	-	-	-	-	-	-	489	513	-	640	579	-
Stage 2	-	-	-	-	-	-	594	579	-	536	510	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.7	16	14.7
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	485	1315	-	-	1048	-	-	381
HCM Lane V/C Ratio	0.327	0.011	-	-	0.057	-	-	0.029
HCM Control Delay (s)	16	7.8	0.1	-	8.6	0	-	14.7
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0.2	-	-	0.1



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	125	248	62	342	350	11
Future Volume (vph)	125	248	62	342	350	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.996	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1855	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1855	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	346			169	390	
Travel Time (s)	7.9			3.8	8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	270	67	372	380	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	270	67	372	392	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.1%		ICU Level of Service A	
Analysis Period (min) 15			

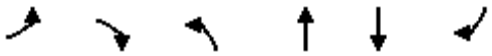
Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	125	248	62	342	350	11
Future Vol, veh/h	125	248	62	342	350	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	270	67	372	380	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	892	386	392	0	-	0
Stage 1	386	-	-	-	-	-
Stage 2	506	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	312	662	1167	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	294	662	1167	-	-	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.5	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1167	-	294	662	-	-
HCM Lane V/C Ratio	0.058	-	0.462	0.407	-	-
HCM Control Delay (s)	8.3	-	27.3	14.1	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.2	-	2.3	2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	38	10	598	966	2
Future Volume (vph)	9	38	10	598	966	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	14	12
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		70			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.891					
Flt Protected	0.990		0.950			
Satd. Flow (prot)	1643	0	1770	1925	1987	0
Flt Permitted	0.990		0.950			
Satd. Flow (perm)	1643	0	1770	1925	1987	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	223			332	170	
Travel Time (s)	5.1			7.5	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	41	11	650	1050	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	0	11	650	1052	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

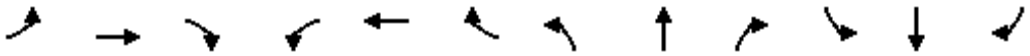
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	38	10	598	966	2
Future Vol, veh/h	9	38	10	598	966	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	41	11	650	1050	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1723	1051	1052	0	-	0
Stage 1	1051	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	98	276	662	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	96	276	662	-	-	-
Mov Cap-2 Maneuver	96	-	-	-	-	-
Stage 1	330	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.6	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	662	-	203	-	-
HCM Lane V/C Ratio	0.016	-	0.252	-	-
HCM Control Delay (s)	10.5	-	28.6	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

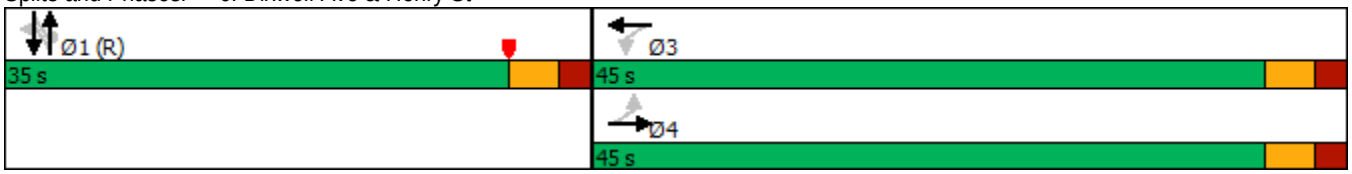


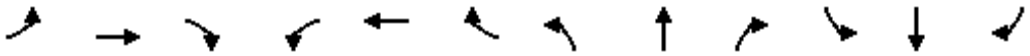
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Future Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	16	12	12	16	12	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.995			0.976			0.994	
Flt Protected		0.994			0.992			0.997			0.995	
Satd. Flow (prot)	0	1706	0	0	1805	0	0	1699	0	0	1808	0
Flt Permitted		0.794			0.755			0.896			0.859	
Satd. Flow (perm)	0	1363	0	0	1373	0	0	1527	0	0	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			3			16			3	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		407			477			364			549	
Travel Time (s)		11.1			13.0			9.9			15.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Adj. Flow (vph)	89	548	60	134	684	31	38	413	99	66	605	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	697	0	0	849	0	0	550	0	0	701	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Detector Phase	4	4		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	
Total Split (s)	45.0	45.0		45.0	45.0		35.0	35.0		35.0	35.0	
Total Split (%)	56.3%	56.3%		56.3%	56.3%		43.8%	43.8%		43.8%	43.8%	
Maximum Green (s)	40.0	40.0		40.0	40.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		0.2	0.2		0.2	0.2	
Recall Mode	Min	Min		Min	Min		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		40.0			40.0			30.0			30.0	
Actuated g/C Ratio		0.50			0.50			0.38			0.38	
v/c Ratio		1.02			1.23			0.95			1.19	
Control Delay		61.3			137.6			51.8			129.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		61.3			137.6			51.8			129.6	
LOS		E			F			D			F	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		61.3			137.6			51.8			129.6	
Approach LOS		E			F			D			F	
Queue Length 50th (ft)		~346			~546			254			~432	
Queue Length 95th (ft)		#580			m#718			#460			#642	
Internal Link Dist (ft)		327			397			284			469	
Turn Bay Length (ft)												
Base Capacity (vph)		685			688			582			587	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		1.02			1.23			0.95			1.19	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 99.7		Intersection LOS: F	
Intersection Capacity Utilization 129.9%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Dixwell Ave & Henry St

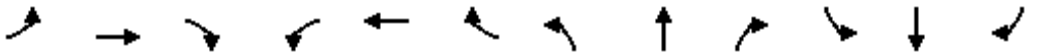




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Future Volume (vph)	83	510	56	125	636	29	35	384	92	61	563	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	16	12	12	16	12	12	16	12
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.98			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1706			1805			1698			1809	
Flt Permitted		0.79			0.75			0.90			0.86	
Satd. Flow (perm)		1364			1373			1526			1562	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	89	548	60	134	684	31	38	413	99	66	605	30
RTOR Reduction (vph)	0	4	0	0	2	0	0	10	0	0	2	0
Lane Group Flow (vph)	0	693	0	0	848	0	0	540	0	0	699	0
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	11%	11%	11%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			3			1			1	
Permitted Phases	4			3			1			1		
Actuated Green, G (s)		40.0			40.0			30.0			30.0	
Effective Green, g (s)		40.0			40.0			30.0			30.0	
Actuated g/C Ratio		0.50			0.50			0.38			0.38	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		682			686			572			585	
v/s Ratio Prot												
v/s Ratio Perm		0.51			c0.62			0.35			c0.45	
v/c Ratio		1.02			1.24			0.94			1.20	
Uniform Delay, d1		20.0			20.0			24.2			25.0	
Progression Factor		1.00			1.07			1.00			1.00	
Incremental Delay, d2		38.6			114.6			26.1			103.7	
Delay (s)		58.6			136.1			50.3			128.7	
Level of Service		E			F			D			F	
Approach Delay (s)		58.6			136.1			50.3			128.7	
Approach LOS		E			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	98.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	129.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



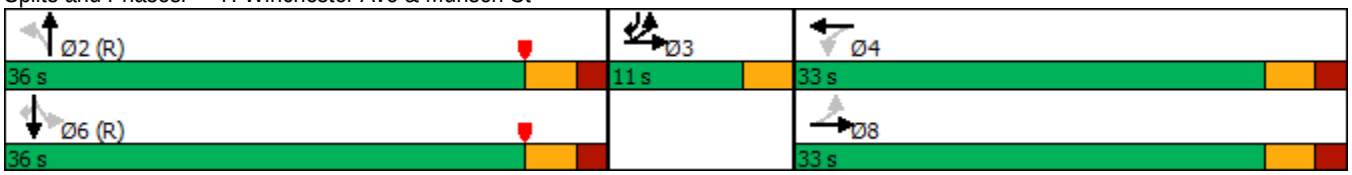
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	342	38	57	321	59	72	264	63	73	333	598
Future Volume (vph)	288	342	38	57	321	59	72	264	63	73	333	598
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	16	12	12	16	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.982			0.979				0.850
Flt Protected	0.950				0.994			0.991			0.991	
Satd. Flow (prot)	1486	1651	0	0	1669	0	0	1659	0	0	1661	1283
Flt Permitted	0.340				0.894			0.696			0.840	
Satd. Flow (perm)	532	1651	0	0	1501	0	0	1165	0	0	1408	1283
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												299
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		234			824			435			332	
Travel Time (s)		5.3			18.7			9.9			7.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)					0			0				0
Adj. Flow (vph)	313	372	41	62	349	64	78	287	68	79	362	650
Shared Lane Traffic (%)												
Lane Group Flow (vph)	313	413	0	0	475	0	0	433	0	0	441	650
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Detector Phase	3	3 8		4	4		2	2		6	6	3
Switch Phase												
Minimum Initial (s)	6.0			6.0	6.0		10.0	10.0		10.0	10.0	6.0
Minimum Split (s)	9.1			33.0	33.0		27.0	27.0		27.0	27.0	9.1
Total Split (s)	11.0			33.0	33.0		36.0	36.0		36.0	36.0	11.0
Total Split (%)	13.8%			41.3%	41.3%		45.0%	45.0%		45.0%	45.0%	13.8%
Maximum Green (s)	7.9			28.0	28.0		31.0	31.0		31.0	31.0	7.9
Yellow Time (s)	3.0			3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.1			2.0	2.0		2.0	2.0		2.0	2.0	0.1
Lost Time Adjust (s)	0.0				0.0			0.0			0.0	0.0
Total Lost Time (s)	3.1				5.0			5.0			5.0	3.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None			None	None		C-Max	C-Max		C-Max	C-Max	None
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)				21.0	21.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effct Green (s)	36.7	39.8			26.9			32.1			32.1	45.0
Actuated g/C Ratio	0.46	0.50			0.34			0.40			0.40	0.56
v/c Ratio	0.93	0.50			0.94			0.93			0.78	0.76
Control Delay	45.7	20.8			55.2			53.5			33.5	14.5
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	45.7	20.8			55.2			53.5			33.5	14.5
LOS	D	C			E			D			C	B

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Parking (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	41%
Maximum Green (s)	28.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		31.5			55.2			53.5			22.2	
Approach LOS		C			E			D			C	
Queue Length 50th (ft)	116	158			222			206			192	124
Queue Length 95th (ft)	m125	m168			#403			#392			#352	290
Internal Link Dist (ft)		154			744			355			252	
Turn Bay Length (ft)												
Base Capacity (vph)	338	844			525			466			564	851
Starvation Cap Reductn	0	0			0			0			0	0
Spillback Cap Reductn	0	0			0			0			0	0
Storage Cap Reductn	0	0			0			0			0	0
Reduced v/c Ratio	0.93	0.49			0.90			0.93			0.78	0.76

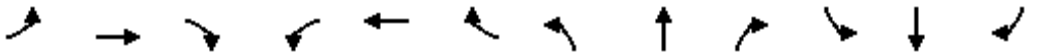
Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 35.4		Intersection LOS: D	
Intersection Capacity Utilization 112.7%		ICU Level of Service H	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 7: Winchester Ave & Munson St



Lane Group	Ø8
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

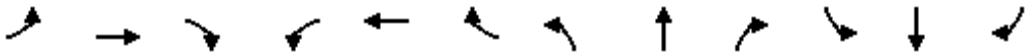
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	342	38	57	321	59	72	264	63	73	333	598
Future Volume (vph)	288	342	38	57	321	59	72	264	63	73	333	598
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	16	12	12	16	12	12	12	12
Total Lost time (s)	3.1	3.1			5.0			5.0			5.0	3.1
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.98			0.98			1.00	0.85
Flt Protected	0.95	1.00			0.99			0.99			0.99	1.00
Satd. Flow (prot)	1486	1652			1668			1659			1662	1282
Flt Permitted	0.34	1.00			0.89			0.70			0.84	1.00
Satd. Flow (perm)	532	1652			1501			1164			1408	1282
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	372	41	62	349	64	78	287	68	79	362	650
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	150
Lane Group Flow (vph)	313	413	0	0	475	0	0	433	0	0	441	501
Parking (#/hr)					0			0				0
Turn Type	custom	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	3	3 8			4			2			6	3
Permitted Phases	8			4			2			6		6
Actuated Green, G (s)	34.8	37.9			26.9			32.1			32.1	40.0
Effective Green, g (s)	34.8	37.9			26.9			32.1			32.1	40.0
Actuated g/C Ratio	0.43	0.47			0.34			0.40			0.40	0.50
Clearance Time (s)	3.1				5.0			5.0			5.0	3.1
Vehicle Extension (s)	2.0				2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	325	782			504			467			564	641
v/s Ratio Prot	c0.09	0.25										0.08
v/s Ratio Perm	c0.32				0.32			c0.37			0.31	0.31
v/c Ratio	0.96	0.53			0.94			0.93			0.78	0.78
Uniform Delay, d1	21.9	14.8			25.8			22.8			20.9	16.4
Progression Factor	1.44	1.44			1.00			1.00			1.00	1.00
Incremental Delay, d2	26.9	0.2			26.0			26.9			10.4	5.7
Delay (s)	58.5	21.5			51.8			49.8			31.2	22.1
Level of Service	E	C			D			D			C	C
Approach Delay (s)		37.5			51.8			49.8			25.8	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.1
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	451	0	0	393	50	11	48	51	124	0	25
Future Volume (vph)	30	451	0	0	393	50	11	48	51	124	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	15	12	12	16	12	11	10	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.985			0.938			0.865	
Flt Protected		0.997						0.995		0.950		
Satd. Flow (prot)	0	1894	0	0	1816	0	0	1596	0	1540	0	0
Flt Permitted		0.997						0.995		0.950		
Satd. Flow (perm)	0	1894	0	0	1816	0	0	1596	0	1540	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		824			735			329			356	
Travel Time (s)		18.7			16.7			7.5			8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)								0				
Adj. Flow (vph)	33	490	0	0	427	54	12	52	55	135	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	523	0	0	481	0	0	119	0	135	27	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

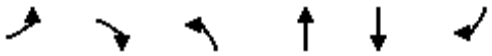
Intersection	
Int Delay, s/veh	17.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	451	0	0	393	50	11	48	51	124	0	25
Future Vol, veh/h	30	451	0	0	393	50	11	48	51	124	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	490	0	0	427	54	12	52	55	135	0	27

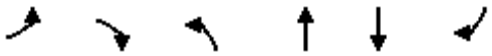
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	481	0	-	-	-	0	1024	1037	490	1064	-	454
Stage 1	-	-	-	-	-	-	556	556	-	454	-	-
Stage 2	-	-	-	-	-	-	468	481	-	610	-	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1082	-	0	0	-	-	214	231	578	201	0	606
Stage 1	-	-	0	0	-	-	515	513	-	586	0	-
Stage 2	-	-	0	0	-	-	575	554	-	482	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1082	-	-	-	-	-	198	221	578	144	-	606
Mov Cap-2 Maneuver	-	-	-	-	-	-	198	221	-	144	-	-
Stage 1	-	-	-	-	-	-	493	491	-	561	-	-
Stage 2	-	-	-	-	-	-	549	554	-	373	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	24.2	120.9
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	305	1082	-	-	-	165
HCM Lane V/C Ratio	0.392	0.03	-	-	-	0.982
HCM Control Delay (s)	24.2	8.4	0	-	-	120.9
HCM Lane LOS	C	A	A	-	-	F
HCM 95th %tile Q(veh)	1.8	0.1	-	-	-	7.6



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	66	528	390	199	232	39	
Future Volume (vph)	66	528	390	199	232	39	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	14	12	12	16	16	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.880				0.981		
Flt Protected	0.994			0.968			
Satd. Flow (prot)	1738	0	0	2044	2071	0	
Flt Permitted	0.994			0.451			
Satd. Flow (perm)	1738	0	0	952	2071	0	
Right Turn on Red		No				Yes	
Satd. Flow (RTOR)					11		
Link Speed (mph)	30			30	30		
Link Distance (ft)	735			185	377		
Travel Time (s)	16.7			4.2	8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	72	574	424	216	252	42	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	646	0	0	640	294	0	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	7		8	2 8	2		3
Permitted Phases			2				
Detector Phase	7		8	2 8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0		10.0		1.0
Minimum Split (s)	9.2		9.3		14.9		19.0
Total Split (s)	16.0		15.0		25.0		19.0
Total Split (%)	21.3%		20.0%		33.3%		25%
Maximum Green (s)	11.8		10.7		20.1		15.0
Yellow Time (s)	3.2		3.2		3.2		4.0
All-Red Time (s)	1.0		1.1		1.7		0.0
Lost Time Adjust (s)	0.0				0.0		
Total Lost Time (s)	4.2				4.9		
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Vehicle Extension (s)	1.0		1.0		2.0		3.0
Recall Mode	None		None		C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							8.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)	30.8			30.2	20.1		
Actuated g/C Ratio	0.41			0.40	0.27		
v/c Ratio	0.91			1.21	0.52		
Control Delay	40.1			131.3	26.4		
Queue Delay	0.0			1.2	0.0		
Total Delay	40.1			132.5	26.4		
LOS	D			F	C		
Approach Delay	40.1			132.5	26.4		

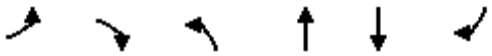


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Approach LOS	D			F	C		
Queue Length 50th (ft)	273			~237	111		
Queue Length 95th (ft)	#479			#424	184		
Internal Link Dist (ft)	655			105	297		
Turn Bay Length (ft)							
Base Capacity (vph)	713			530	563		
Starvation Cap Reductn	0			70	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.91			1.39	0.52		

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 8 (11%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 75.0		Intersection LOS: E	
Intersection Capacity Utilization 94.6%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Prospect St & Hillside Pl



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	66	528	390	199	232	39
Future Volume (vph)	66	528	390	199	232	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	16	16	12
Total Lost time (s)	4.2			4.9	4.9	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.88			1.00	0.98	
Flt Protected	0.99			0.97	1.00	
Satd. Flow (prot)	1739			2043	2070	
Flt Permitted	0.99			0.45	1.00	
Satd. Flow (perm)	1739			952	2070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	574	424	216	252	42
RTOR Reduction (vph)	0	0	0	0	8	0
Lane Group Flow (vph)	646	0	0	640	286	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	7		8	2 8	2	
Permitted Phases			2			
Actuated Green, G (s)	30.8			30.8	20.1	
Effective Green, g (s)	30.8			30.8	20.1	
Actuated g/C Ratio	0.41			0.41	0.27	
Clearance Time (s)	4.2				4.9	
Vehicle Extension (s)	1.0				2.0	
Lane Grp Cap (vph)	714			546	554	
v/s Ratio Prot	c0.37			c0.17	0.14	
v/s Ratio Perm				c0.31		
v/c Ratio	0.90			1.17	0.52	
Uniform Delay, d1	20.7			22.1	23.3	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	14.6			95.7	3.4	
Delay (s)	35.4			117.8	26.7	
Level of Service	D			F	C	
Approach Delay (s)	35.4			117.8	26.7	
Approach LOS	D			F	C	

Intersection Summary			
HCM 2000 Control Delay	67.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

FUSS & O'NEILL

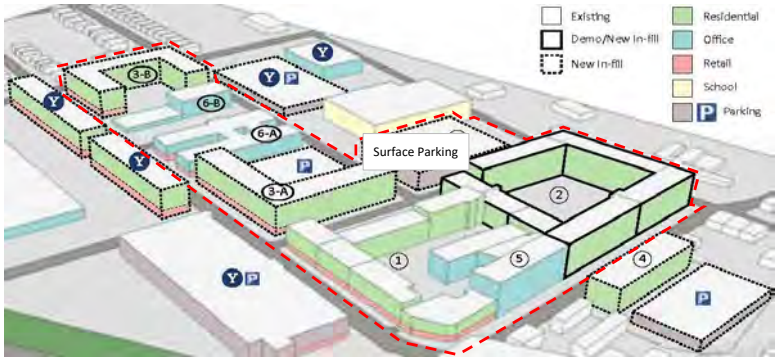
Appendix D

Master Plan Summary Sheet

[DRAFT] Winchester Master Plan SF Analysis for PDD #49 Amendment's Traffic Analysis 8/3/2021

Assumptions

** Parking Spaces: All existing and proposed surface parking spaces are not included.*
** Winchester Lofts (Site 1): Currently occupied.*
** 115 Munson Street (Site 5): Currently 50% occupied (office)*
** Tract J (Site 4): Not part of PDD #49 or traffic analysis. (Max ZSF: 168,184 SF)*
** Site Diagram: Reference Only. Building massing and program to be updated.*



** Tract Map: Tracts A,D, E are under PDD.*

Phase 1 Only: Existing Development + Site 3A (Winchester Green)

Tract	Building	Total GSF	Residential Units	Residential GSF*	Retail GSF	Office GSF
TOTAL		791,232	456	489,999	12,000	289,233
A	Site 1 - Winchester Lofts - occupied residential building	227,499	156	227,499	-	-
	Site 2 - Mansfield Green - FUTURE	-	-	-	-	-
	Site 5 - 115 Munson - office in lease up	147,155	-	-	-	147,155
D	Site 7 - Surface Parking	-	-	-	-	-
E	Site 3A (Winchester Green)* - Resi + Retail	274,500	300	262,500	12,000	-
	Site 3B* - Resi + Retail - FUTURE	-	-	-	-	-
	Site 6A - SPDC 5 - occupied office	110,824	-	-	-	110,824
	Site 6B - SPDC 4 - occupied office	31,254	-	-	-	31,254

** Site 3A: 5 -story 65' wide resi with 47,450 SF footprint. Site 3B: 5-story 65' wide resi with 39,650 SF footprint. Both BLDGs have partial Retail along Winchester Ave.*

Master Plan - Max Resi

Tract	Building	Total GSF	Residential Units	Residential GSF*	Retail GSF	Office GSF
TOTAL		1,586,732	1,156	1,102,499	27,000	457,233
A	Site 1 - Winchester Lofts - occupied residential building	227,499	156	227,499	-	-
	Site 2 - Mansfield Green	437,500	500	437,500	-	-
	Site 5 - 115 Munson	147,155	-	-	-	147,155
D	Site 7 - Surface Parking	175,000	-	-	-	175,000
E	Site 3A (Winchester Green)* - Resi + Retail	274,500	300	262,500	12,000	-
	Site 3B* - Resi + Retail	183,000	200	175,000	8,000	-
	Site 6A - SPDC 5 - occupied office	110,824	-	-	5,000	105,824
	Site 6B - SPDC 4 - occupied office	31,254	-	-	2,000	29,254

** Site 3A: 5 -story 65' wide resi with 47,450 SF footprint. Site 3B: 5-story 65' wide resi with 39,650 SF footprint. Both BLDGs have partial Retail along Winchester Ave.*

Appendix 5

Table of Deviations

Revised Appendix 5

REVISED TABLE OF DEVIATIONS FROM PDD #49 CONTROLS AND IH AND BA ZONING REQUIREMENTS FOR PARCELS B, C, L & M

PDD or Zoning Ordinance Section	**Requirement**	**Deviation –**(See notes)
Yards		
PDD 1985 Amend. § I.E.3 PDD 1983 § I.E. (front yards)	New structures to be set back 25' from street line on Mansfield and Division Street	No front yards required
PDD 2010 Amend, App. 5 (front yards)	10' setback from street line for new structures on Parcel L	No front yards required
Zoning Ord. § 43(f)(2) (side yards)	None required, but if a side yard is provided, it must be not less than 5' for a 20' or shorter building and for taller buildings, not less than 1' foot for each 4' of building height	None required
Zoning Ord. § 43(f)(3) (rear yards)	10' for a building 30' or less and for taller buildings 1' for each 2' of building wall height	None required
PDD 1983 § I.E.3	All new structures along Winchester Avenue (Parcels B, C and D) to match setbacks of existing buildings	Not required
Building Height		
PDD 1985 Amend. § I.E.3 PDD 1983 § I.E.	Buildings along Division and Mansfield Street perimeter streets adjacent to residential uses (Mansfield St.) limited to 3 stories for at least 100' back from the building line; high rise development limited to Parcel C and southerly portion of Parcel D	No limit
PDD 2010 Amend. App. 5	New buildings on Mansfield Street shall match the height of the historic buildings on	Not required

	Mansfield Street of 75' on Parcel L	
Floor Area Ratio		
Zoning Ord. § 43(b)(i)	4.0 in the IH District 2.0 in the BA District	6.0
Parking		
Zoning Ord. § 45(a).a	Hotel, tourist home – 1/unit	1/2 /unit
Zoning Ord. § 45(a)(1)a.n	Retail sales and services — 1/400 sq. ft.	1/500 sq. ft.
Zoning Ord. § 45(a)(1) a.6.0 General Office, including Research Labs and High Technology Services	One per 750 sq. ft of gross floor area	One per 1,000 sq. ft of gross floor area
Zoning Ord. § 45(a)(1)a.p. Place of assembly, eating drink place, _____	1 per 4 seats Total capacity	One per 6 seats total capacity
Zoning Ord. § 45(a)1a.g.	1 per dwelling unit	½ per dwelling unit
Zoning Ord. §§ 45(a)(6)	Joint use of a parking space - needs agreement filed on land records and a special exception from the BZA	Joint use of parking spaces does not need a special exception. An agreement on joint use shall be presented to City Plan Commission for approval as part of detailed plans review. Such agreement does not need to be filed on the land records.
PDD 1983 § I.E.	Parking along Division Street to be set back 25' from Street Line.	No setback required
1985 Amendment § I.E.	Parking along Mansfield Street to match existing building locations	Not required
1985 Amendment § I.E.	All new parking along existing streets to match existing or proposed building setbacks	Not required
Zoning Ord. Sec. 42, Table 3, Sec. R, Transportation	Parking structures and parking lots capable of containing 200 or more spaces for employees, customers or visitors for any business and industrial use or commercial parking	No special permit required

	lots or parking structures of this size require a special permit	
Loading		
Zoning Ord. §§ 45(a)(1)b (where one establishment has 2 or more distinct uses, each shall be measured separately)	Use primarily concerned with goods – 2,400-20,000 sq. ft. - 1 space 20,001-50,000 sq. ft. - 2 spaces 50,001-80,000 sq. ft.– 3 spaces Each add'l 45,000 sq. ft. – 1 space Use not primarily concerned with handling goods – 2,400-75,000 sq. ft.- 1 space 75,001 – 200,000 sq. ft. – 2 spaces 200,001-333,000 sq. ft. – 3 spaces Each add'l 150.000 sq. ft. 1 add'l space	For Parcels B, C, L & M, a minimum of one loading space will be provided for each non residential building over 100,000 sq. ft. and no loading spaces will be required for residential, or mixed use buildings
PDD 2010 Amend. Appendix 5	A minimum of four loading spaces uses on Parcel L at full build out of Parcel L; each use will not require a separate loading space; one loading space will be required for the office building to be built during Phase One of the development of Parcel L.	For Parcels B, C, L & M, a minimum of one loading space will be required for each non residential building over 100,000 sq. ft. and no loading spaces will be required for residential, or mixed use buildings
Zoning Ord. §§ 45(a)(6)	Joint use of a loading space - need agreement filed on land records and special exception from the BZA	Joint use of a loading space on Parcels B, C, L & M will be permitted as of right, no agreement or special exception will be required.
Lot Definition		
Zoning Ord. §1	Parcel of Land in the same ownership	Parcels L and M shall each be considered one

		lot for purposes of the Zoning Ordinance (although three individual parcels that comprise Parcel L are in separate ownership and three individual parcels comprise Parcel M).
Landscaping		
PDD 1983 § I.E. PDD 1985 Amend. § I.E.3	All improved streets throughout Science Park will have street shade trees	The existing shade trees along Mansfield and Munson Streets on the perimeter of Parcel L will remain or be replaced. The shade trees along the Winchester Avenue side of Parcel L will be supplemented with additional trees.
PDD 1985 Amend. § I.E.3	The 25' setback along Mansfield Street and Division Street will be a landscaped area of lawn and trees	No setback area along Mansfield Street and Division Street is required
PDD 1983 § I.E.	Southwest corner of Division and Mansfield Streets will be a small paved pedestrian area with benches and shade trees	Not required
Other		
PDD 1983, Section I.E.	Biological research at the P3 and P4 containment level (see Department of Health and Human Service, National Institutes of Health, Research Guidelines, Federal Register Volume 47, No. 167, p. 38047) will not be permitted without the approval of the City Plan Commission.	Biological research laboratories which are regulated as Biosafety Levels 1, 2 and 3 by the United States Department of Health and Human Services Centers for Disease Control and Prevention and the National Institute of Health will be allowed as of right. No biological laboratory regulated as Biosafety

		Level 4 will be permitted.
PDD 1983, § I.E.	Entry points to Science Park are limited to Division Street and Winchester Avenue; entry point on Mansfield Street is limited to service dock on Parcel B (Highville Charter School)	No limitation on entry points to Science Park.

Appendix 6

General Plans

N
W E
S

RM2
PDD64
THOMPSON STREET
NEWHALL STREET
STARR STREET
GIBBS STREET
DIVISION STREET
CA
YLE STREET
SHELTON STREET
WINCHESTER AVENUE
IH
PDD 49
RM2
MUNSON STREET
PROSPECT STREET
HENRY STREET
CANAL STREET
Farmington Greenway
BA
HILLSIDE PLACE
DIXWELL STREET
ADMIRAL STREET
ASHMUN STREET
IL
TILTON STREET
MANSFIELD STREET
EDWARDS
BA
RM2
WOODLAND STREET
PROSPECT STREET
RH2
RM2
COMPTON STREET
TER STREET

J/DWG/P2009/0865/S20/Presentation/20090865S20_PRE02_Zone_Change_Maps.dwg

LEGEND

ZONING BOUNDARY

PDD - Planned Development District
RM2 - High Middle Density Residential District
RH2 - General High Density Residential District
IL - Light Industrial District
IH - Heavy Industrial District
BA - General Business District

SCIENCE PARK PDD#49
EXISTING ZONE BOUNDARY
NEW HAVEN, CONNECTICUT

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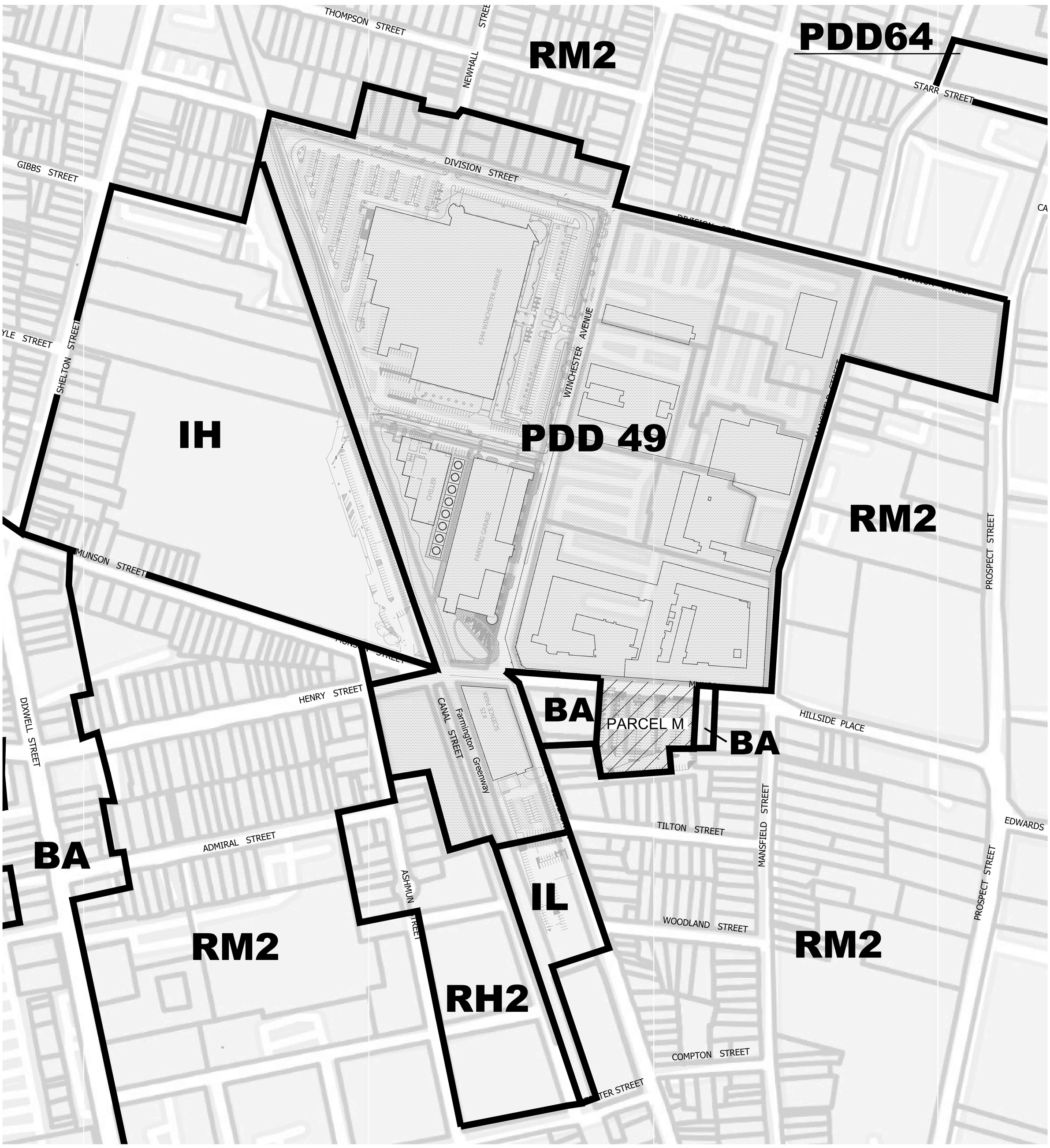

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LEGEND

PROPOSED BOUNDARY

PARCEL M

PDD - Planned Development District
RM2 - High Middle Density Residential District
RH2 - General High Density Residential District
IL - Light Industrial District
IH - Heavy Industrial District
BA - General Business District

SCIENCE PARK PDD#49
PROPOSED ZONE BOUNDARY
NEW HAVEN, CONNECTICUT

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N
W E
S

STARR STREET
THOMPSON STREET
NEWHALL STREET
SHEFFIELD AVENUE
SHELDON STREET
STARR STREET
PARCEL E
GIBBS STREET
DIVISION STREET
DIVISION STREET
DIVISION STREET
PARCEL D
#344 WINCHESTER AVENUE
WINCHESTER AVENUE
PARCEL B
PARCEL A
PDD 49
PARCEL C
SHELTON STREET
CANFIELD STREET
PROSPECT STREET
PARCEL G
CHILLER
PARKING GAR
PARCEL L
MUNSON STREET
MUNSON STREET
HENRY STREET
CANAL STREET
Farmington Greenway
#25 SCIENCE PARK
PROPOSED PARCEL M
HILLSIDE PLACE
PARCEL K
PARCEL J
DIXWELL STREET
ADMIRAL STREET
ASHMUN STREET
TILTON STREET
MANSFIELD STREET
WOODLAND STREET
PROSPECT STREET

PROJECT LOCATION

LOCATION MAP
SCALE: 1"=2000'

PARCEL	USE
A	OPEN SPACE / COMMUNITY GARDEN
B	OFFICE / EDUCATIONAL USE / PARKING
C	RESEARCH AND DEVELOPMENT / NONPROFIT USE
D	OFFICE / LIGHT MANUFACTURING / WAREHOUSE
E	RESIDENTIAL
G	PARK / GARAGE WITH GROUND FLOOR RETAIL / CHILLER
J	RESEARCH AND DEVELOPMENT / OFFICE
K	MIXED-USE RESIDENTIAL / RETAIL (PROPOSED AND APPROVED)
L	RESIDENTIAL / RESEARCH AND DEVELOPMENT / MIXED-USE RESIDENTIAL / RETAIL (PROPOSED AND APPROVED) / PARKING (PROPOSED AND APPROVED)

PDD #49
CURRENT PARCEL AND USE MAP
NEW HAVEN, CONNECTICUT

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J/DWG/P2009/0865/S20/Presentation/20090865S20_PRE02_Zone_Change_Maps.dwg

N
W E
S

WINCHESTER AVENUE

N/F
HIGHVILLE CHARTER SCHOOL, INC
300 MANSFIELD STREET
VOL. 9259 PG. 226

'TRACT E'
N/F
SPDC TRACT E, LLC
315 WINCHESTER AVENUE
AREA=87,483± S.F. 2.008 AC.
VOL. 6821 PG. 1
MBLU: 256 0393 00106

315 WINCHESTER AVENUE

'TRACT D'
N/F
SPDC TRACT D, LLC
270 MANSFIELD STREET
AREA=91,949 S.F. 2.111 AC.
VOL. 6820 PG. 334
MBLU: 256 0393 00105

270 MANSFIELD STREET

N/F
SPDC TRACT A, LLC
275 WINCHESTER AVENUE
VOL. 6820 PG 310
TRACT A

275 WINCHESTER AVE

MANSFIELD STREET

MUNSON STREET

6-D
3-D
5-D
4-D
8-D
4-A
5-A
3-A
28-A
2-A
29-A
1-A
30-A
7-A
34-A
8-A
9-A
33-A
26-A
27-A
35-A
31-A
32-A

LEGEND - BUILDINGS TO BE DEMOLISHED

BUILDINGS DECLARED BY STATE DPH UNUSABLE DUE TO CONTAMINANTS

BUILDINGS PREVIOUSLY APPROVED FOR DEMOLITON

BRICK BUILDINGS STRUCTURALLY DETERIORATED BEYOND SALVAGEABILITY

40 0 40 80 120
SCALE: 1" = 40'

PARCEL L
ILLUSTRATIVE DEMOLITION PLAN
NEW HAVEN, CONNECTICUT

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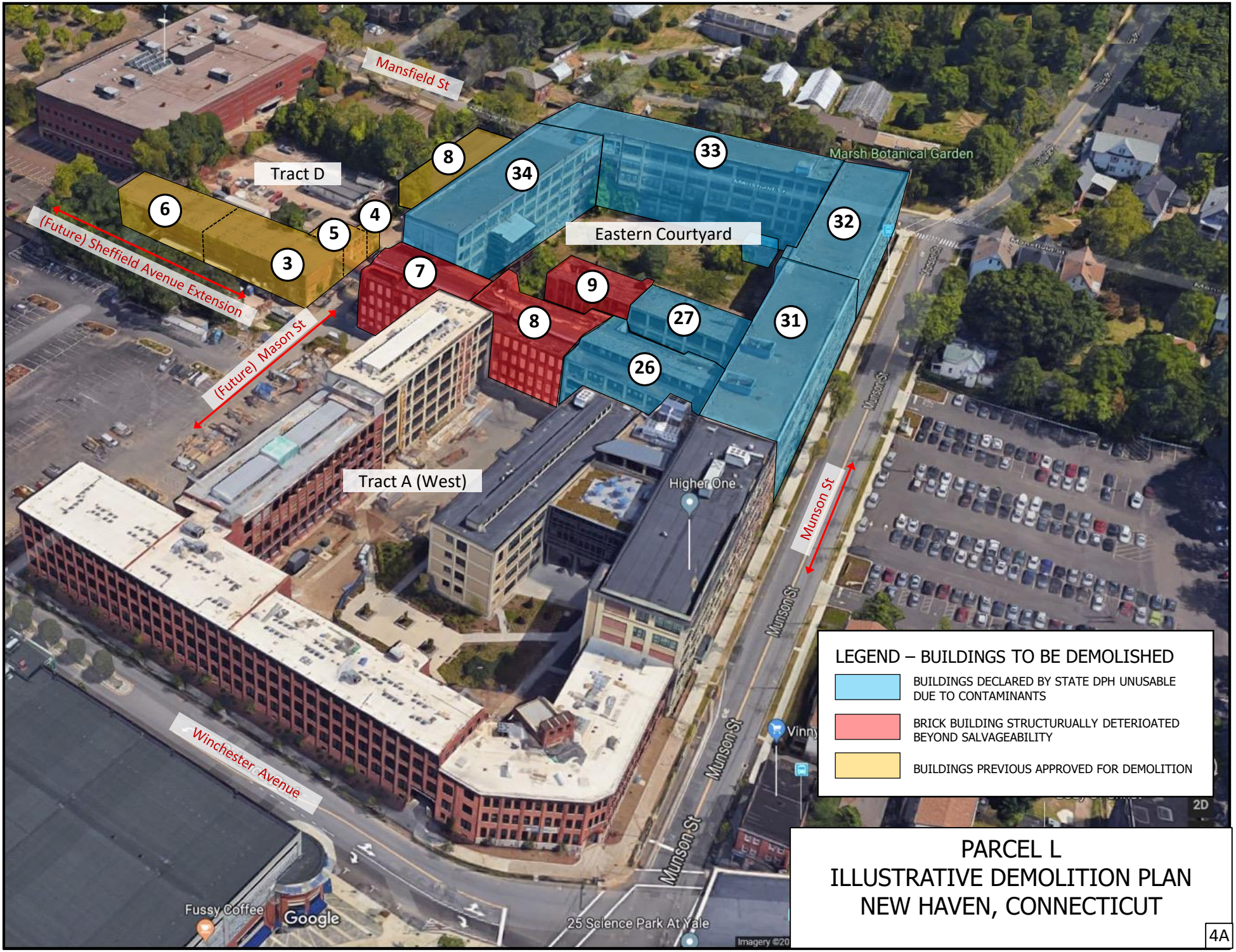
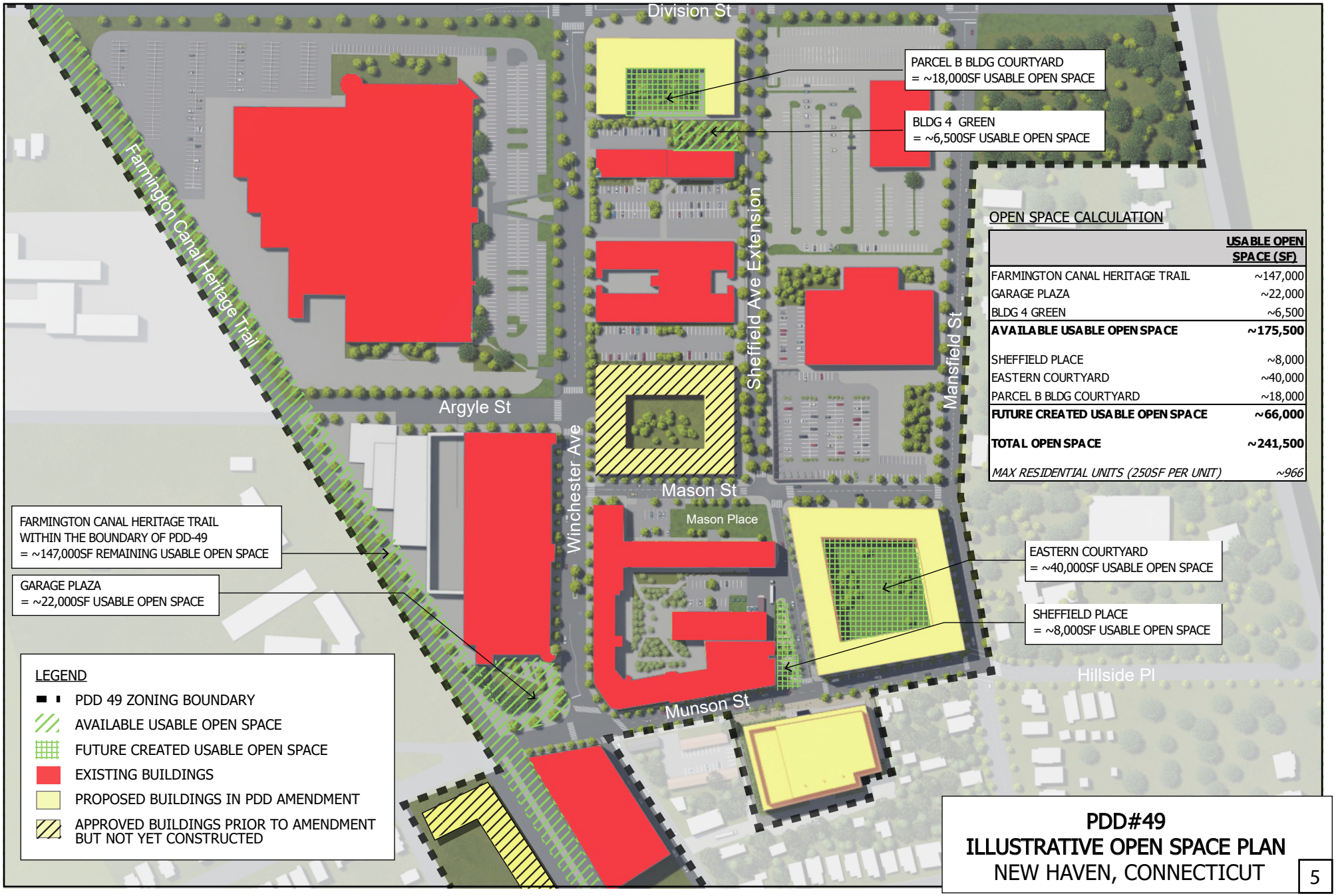
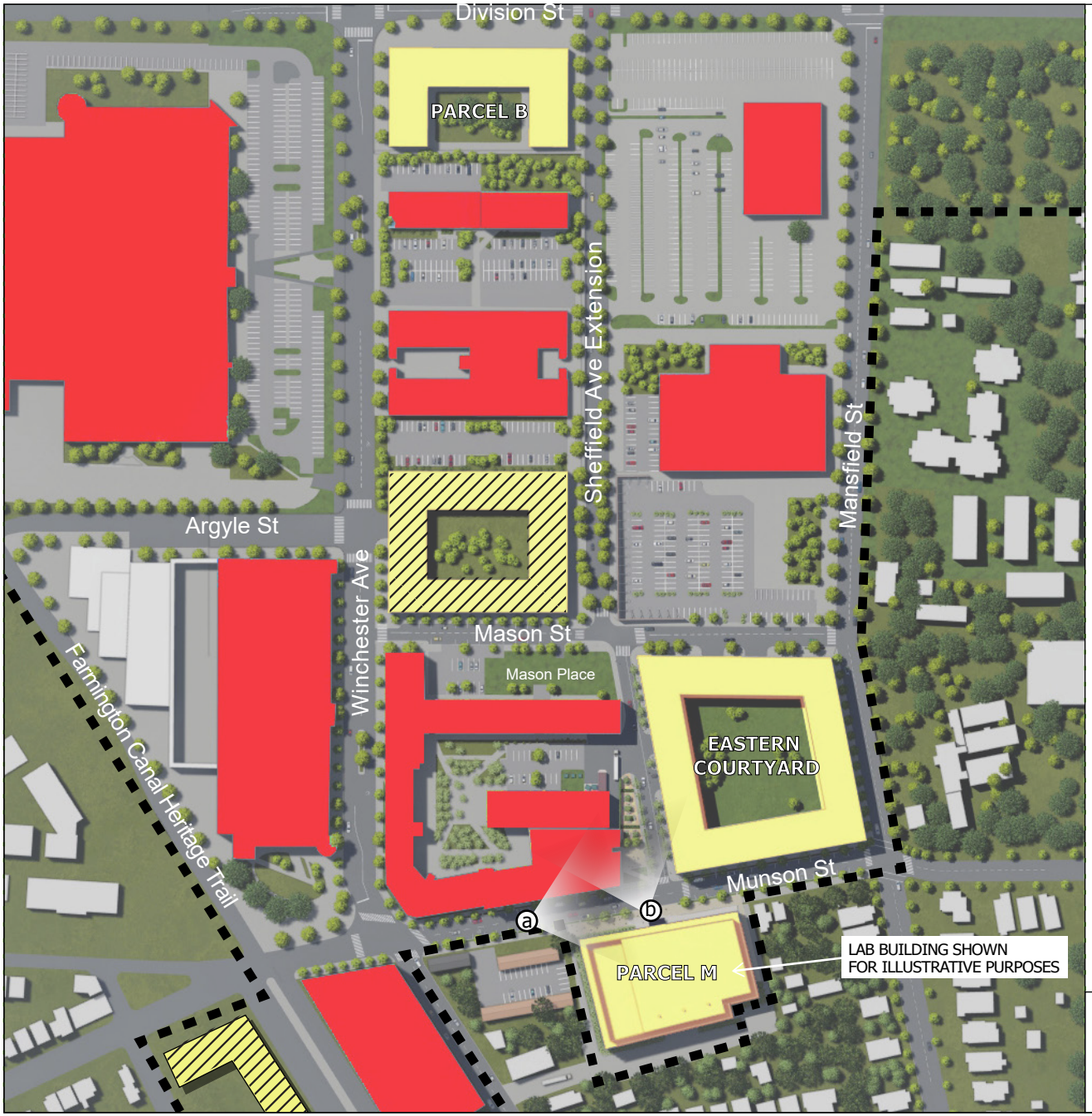

Mansfield St
Tract D
8
34
33
Marsh Botanical Garden
6
5
4
3
Eastern Courtyard
32
(Future) Sheffield Avenue Extension
7
9
8
27
31
(Future) Mason St
26
Tract A (West)
Higher One
Munson St
Munson St
Munson St
Munson St
Winchester Avenue
Fussy Coffee
Google
25 Science Park At Yale
LEGEND – BUILDINGS TO BE DEMOLISHED
BUILDINGS DECLARED BY STATE DPH UNUSABLE DUE TO CONTAMINANTS
BRICK BUILDING STRUCTURUALLY DETERIOATED BEYOND SALVAGEABILITY
BUILDINGS PREVIOUS APPROVED FOR DEMOLITION
PARCEL L
ILLUSTRATIVE DEMOLITION PLAN
NEW HAVEN, CONNECTICUT
4A



OPEN SPACE CALCULATION

	USABLE OPEN SPACE (SF)
FARMINGTON CANAL HERITAGE TRAIL	~147,000
GARAGE PLAZA	~22,000
BLDG 4 GREEN	~6,500
AVAILABLE USABLE OPEN SPACE	**~175,500**
SHEFFIELD PLACE	~8,000
EASTERN COURTYARD	~40,000
PARCEL B BLDG COURTYARD	~18,000
FUTURE CREATED USABLE OPEN SPACE	**~66,000**
TOTAL OPEN SPACE	**~241,500**
MAX RESIDENTIAL UNITS (250SF PER UNIT)	*~966*

PDD#49
ILLUSTRATIVE OPEN SPACE PLAN
NEW HAVEN, CONNECTICUT



LEGEND

- PDD 49 ZONING BOUNDARY
- EXISTING BUILDINGS
- PROPOSED BUILDINGS IN PDD AMENDMENT
- APPROVED BUILDINGS PRIOR TO AMENDMENT BUT NOT YET CONSTRUCTED

PROPOSED BUILDING USES

LOCATION	PROPOSED USES
PARCEL B	MIXED USE / RESIDENTIAL / RETAIL / OFFICE
EASTERN COURTYARD	MIXED USE / RESIDENTIAL / RETAIL / OFFICE
PARCEL M	MIXED USE / RESIDENTIAL / RETAIL / OFFICE

ⓐ Munson Ave. Looking East

ⓑ Sheffield Ave. Extension and Sheffield Place

PDD#49
ILLUSTRATIVE USE PLAN
NEW HAVEN, CONNECTICUT

Appendix 7

Proposed Ordinance

ZONING ORDINANCE TEXT AMENDMENT AND ZONING ORDINANCE MAP AMENDMENT APPROVING EXPANSION OF SCIENCE PARK PLANNED DEVELOPMENT DISTRICT #49 TO INCLUDE PARCELS OF LAND KNOWN AS 88 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02600), 110 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02700) and 116 MUNSON STREET (MAP 257/BLOCK 0356/PARCEL 02500) (collectively "NEW PARCEL M"), AMENDMENT OF THE GENERAL PLANS FOR PORTIONS OF EXISTING PARCEL L and PARCEL B, DIMENSIONAL, PARKING, LOADING and OTHER DEVIATIONS FROM THE REQUIREMENTS OF PDD #49, THE IH ZONE AND THE BA ZONE FOR NEW PARCEL M AND FOR EXISTING PARCELS B, C and L, AND USES FOR NEW PARCEL M AND ADDITIONAL USES FOR EXISTING PARCELS B AND C

WHEREAS, on April 4, 1983, the Board of Aldermen approved a Planned Development District ("PDD") for Science Park pursuant to Section 65 of the New Haven Zoning Ordinance (the "Zoning Ordinance"), PDD #49, which included 35 acres of land located for the most part at the southwest and the southeast corners of the intersection of Division Street and Winchester Avenue and which property was identified as Parcels A, B, C, D, and E on the General Plans for PDD #49; and

WHEREAS, on May 15, 1989, the Board of Aldermen amended PDD #49 to include 10 additional acres located to the south of the original PDD #49, which additional property was depicted on the General Plans for the amended PDD #49 as Parcels G, L and K; and

WHEREAS, PDD #49 was subsequently amended on May 15, 1989 to permit a restaurant, lounge and banquet hall in connection with a conference center on Parcel A and was thereafter amended in 2006 to permit a secondary school on Parcel C; and

WHEREAS, PDD #49 was again amended by the Board of Aldermen on September 7, 2010 to include 11.6 additional acres of land located on Winchester Avenue, Munson Street and Mansfield Street, which additional property was designated in the General Plans

as Parcel L and which amendment permitted residential, retail, medical, commercial, and high technology uses on Parcel L and on certain existing Parcels; and

WHEREAS PDD #49 was subsequently amended on two additional occasions, once by the Board of Aldermen in 2014 to allow primary and secondary schools on Parcel B and thereafter on October 27, 2021 by the Board of Alders to expand the boundaries of Parcel K and to permit a residential use on that Parcel; and

WHEREAS, Science Park Development Corporation ("SPDC") and its affiliates, as more specifically delineated in the Petition, (collectively "SPDC") are the owners of a portion of Parcel B, Parcel C and Parcel L as well as New Parcel M; and

WHEREAS, SPDC ,together with Winchester Holdco LLC, the developer of New Parcel M, and Parcels L, C and a portion of B, filed a petition/application with the City Clerk and with the Board of Alders pursuant to §§ 64 and 65 of the Zoning Ordinance (the "Petition") together with General Plans to amend the Zoning Ordinance and the Zoning Ordinance Map to (i) extend the boundaries of PDD #49 to include New Parcel M so that the parking lot on that site can be transformed into a new office/lab or mixed use residential/retail development, (ii) amend the General Plans for Parcel L to permit the demolition of the dilapidated and dangerous structures on the eastern side of Parcel L, known as the Eastern Courtyard and to permit the construction of a new building on that site, (iii) amend the general plans for Parcel B to replace the parking lot at the corner of Division Street and Winchester Avenue with a new building, (iv) amend the Use Table for PDD #49 (Appendix 1) to set forth the uses for New Parcel M and to provide for certain additional uses for Parcels B and C, in order to permit the construction of residential and retail uses on these Parcels,, and (v) allow certain dimensional, parking and loading

deviations from the controls of PDD #49, the requirements of the BA (General Business) zone for New Parcel M and of the IH (Heavy Industrial) zone for Parcels B, C and L in order to reduce the need for surface parking lots and loading spaces, allow for more densely designed developments and provide that new construction will be feasible and architecturally contextual with the historic structures in Science Park; and

WHEREAS, the Petition was referred to the Board of Alders, which thereafter referred the Petition to the City Plan Commission for a hearing and report as required by § 64(d) of the Zoning Ordinance Regulations and Article XIII, Sections 2A and 2E of the Charter of the City of New Haven; and

WHEREAS, the City Plan Commission held a hearing on _____ on the Petition after providing due notice of the hearing on the Application as required by § 64(d) of the Zoning Ordinance, Article XIII, Secs. 2A and 2E of the City Charter and state law; and

WHEREAS, the City Plan Commission rendered a report after taking into account factors set forth in §§ 64(d) and 65 of the Zoning Ordinance and Article XIII, Section 2C of the City Charter and favorably recommended the approval of the Petition and the General Plans, as set forth in City Plan Commission Report No. _____; and

WHEREAS, the Legislation Committee of the Board of Alders considered the Petition on _____ and rendered a favorable report recommending approval of the Petition; and

WHEREAS, pursuant to § 65(d) of the Zoning Ordinance, the Petition was referred to the City's Department of Transportation, Traffic and Parking for an advisory report on the traffic impact of the changes proposed by the Petition; and

WHEREAS, the advisory report issued by the City's Department of Transportation, Traffic and Parking indicated that with the traffic improvements and mitigating measures proposed by the Petition, there will be no significant adverse impact from the traffic to be generated by the changes proposed in the Petition; and

WHEREAS, the changes requested in the Petition are in accordance with the Comprehensive Plan of the City and are consistent with the standards set forth in Article XIII, Secs. 2B and 2C of the City Charter, as described more particularly in the Petition; and

WHEREAS, the Petition satisfies the objectives for a planned development set forth in § 65 of the Zoning Ordinance, in that the changes proposed, as set forth in more detail in the Petition, are:

(1) In accordance with the comprehensive plans of the City, in particular, the Comprehensive Plan of Development of the City of New Haven entitled Vision 2025; and

(2) Composed of such uses, and in such proportions, as are most appropriate and necessary for the integrated functioning of the planned development and for the City; and

(3) So designed in their space allocation, orientation, texture, materials, landscaping and other features as to produce an environment of stable and desirable character, complementing the design and values of the surrounding neighborhood, and showing such unusual merit as to reflect credit upon the developer and upon the City; and

(4) So arranged as to provide a minimum of 250 square feet of usable open space per dwelling unit on the Tract, subject to the specific minimum standards enumerated in §15(a)(1)g of the Zoning Ordinance.

NOW THEREFORE, BE IT ORDAINED by the Board of Alders of the City of New Haven that (i) the Petition and General Plans are hereby approved, (ii) the text of the Zoning Ordinance with respect to PDD #49 is hereby amended in the manner requested by the Petition to include New Parcel M, the changes to the General Plans for Parcels L and B, the uses set forth in Appendix 1 to the Petition, and the dimensional, parking and loading modifications set forth in Appendix 5 to the Petition, and that (iii) the Zoning Map is hereby amended to include New Parcel M as part of PDD #49.

BE IT FURTHER ORDAINED that pursuant to subsection 9-50(b)(3)(iii)1 of the City of New Haven's Code of Ordinances, the City's Delay of Demolition Ordinance, § 9-50 shall not apply to the buildings listed in the Petition and shown on the General Plans as being potentially slated for demolition.

BE IT FURTHER ORDAINED that the aforesaid Zoning Ordinance text amendment and Zoning Map amendment shall take effect one day after publication of the information pertaining to the Zoning Ordinance text amendment and to the Zoning Map amendment required by Article IV, Section 3.A(2) of the City Charter but in no event less than one week after enactment of this Zoning Text Amendment and this Zoning Map Amendment.

Except as amended herein the Zoning Ordinance and the Zoning Map of the City of New Haven shall remain in full force and effect.